LANDWorksCAD
V5.x

Professional Design & Drafting Software

Reference and User Manual

CAD International

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Introduction

Welcome

Welcome to LANDWorksCAD-V5 and the manual that will help you design your landscapes “better, faster and funner™”.

LANDWorksCAD is easy-to-use, professional-level software specifically created for landscapers’ needs.

You can use LANDWorksCAD to create sketch plans, concept plans, planting plans, hardworks plans, construction details, plant schedules, contour plans and more...

With LANDWorksCAD Pro you can produce three dimensional models of your landscape design, which can be viewed from any position and any angle.

LANDWorksCAD also includes an extensive plant database that is linked to a simple, editable Excel file allowing you to easily set up plants that are specific to you and your area.

The **Error! Reference source not found.** section on page **Error! Bookmark not defined.** shows just a few examples of the type of drawings and models that can be created using LANDWorksCAD.

We’ve spent hundreds of hours producing this manual to show you how to use the LANDWorksCAD menu, but we know you’ll find ways to use the software we had never thought of ☺ so we are looking forward to receiving your thoughts and comments about the software and this manual. If you wish to provide feedback please call +61 2 9973 4499 or send an email to **Error! Hyperlink reference not valid.**.

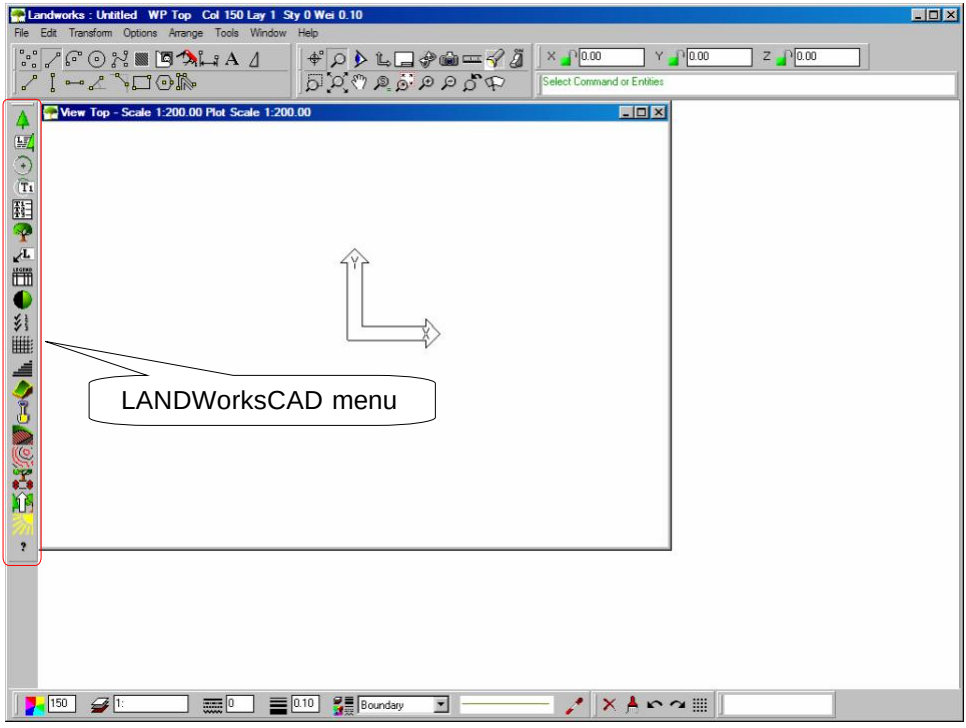
About this Manual

This manual only provides information on the commands in the LANDWorksCAD menu, as indicated in the image below, and the associated Excel plant database.

For information relating to all the other commands, menus and screen areas, as well as underlying concepts, such as system requirements, installation procedure, software licensing, screen resolution, etc, you must refer to the "***Real*CAD** V5.x **Reference and User Manual**", where they are fully explained.

The manuals are structured in this way because LANDWorksCAD is an "application" program for RealCAD. That is, LANDWorksCAD is a program written to operate within RealCAD. While RealCAD can operate all by itself, LANDWorksCAD relies on RealCAD to function.

RealCAD provides the underlying graphics engine that produces the required images and line work for your drawings, but only in a general sense; LANDWorksCAD controls them and points them in a landscaping direction.



This manual has been produced for users of LANDWorksCAD LT (2D only) and LANDWorksCAD Pro (2D and 3D). When using a 2D-only version, references to the Z axis or Z coordinates will be disabled as they are not required.

The terms “Drawing” and “Model” are interchangeable in this manual.

***Note**: You can activate the 3D tools at any time by purchasing an upgrade to a 3D version. No additional software is required, just a new 3D license Key.*

Even if you’ve been using the software for a while, take the time to read through this manual as you’ll find new ways of doing things and shortcuts you may not have thought of.

Overview

This section provides a quick overview of LANDWorksCAD; the commands in the menu and the database of plants that is supplied.

The LANDWorksCAD Commands

Used to insert and label plants at a concept stage of the design.

Used to insert, label and list plants that already exist on site.

Used to insert, label and list plants that are proposed for the design.

→ Used to change how the plants look.

→ Used to extract quantities, lengths and areas.

→ Used to lay a grid over the design.

Used to create and edit 3D digital terrain models (DTM).

→ Used to generate contour lines.

Used to generate 3D or elevation plant on the DTM.

→ Used to insert the Sun, for generating shadows on a DTM.

→ Tells you the current version details of LANDWorksCAD.

Only available in LANDWorksCAD Pro

The Plant Database

LANDWorksCAD is supplied with an extensive plant database allowing you to quickly and easily select the plants you want for your design. You can also edit the plants that are supplied in the database as well as add your own thus allowing you to easily set up plants that are specific to you and your area.

The following points give you some introductory information about the database. For detailed instructions on how to work with it, refer to the Appendices at the end of this manual, which begin on page 128.

The database:

- is a Microsoft Excel spreadsheet
- has a simple format and contains no formulae
- is called **LandworksPlantDatabase.xls** (it must be called this)
- is stored in the LANDWorksCAD-V5 folder (it must reside there)
- can be edited within LANDWorksCAD itself, ie, you do not need to know anything about Excel!
- can also be edited directly in Excel

Command Details

This section explains each command in the LANDWorksCAD menu in detail.

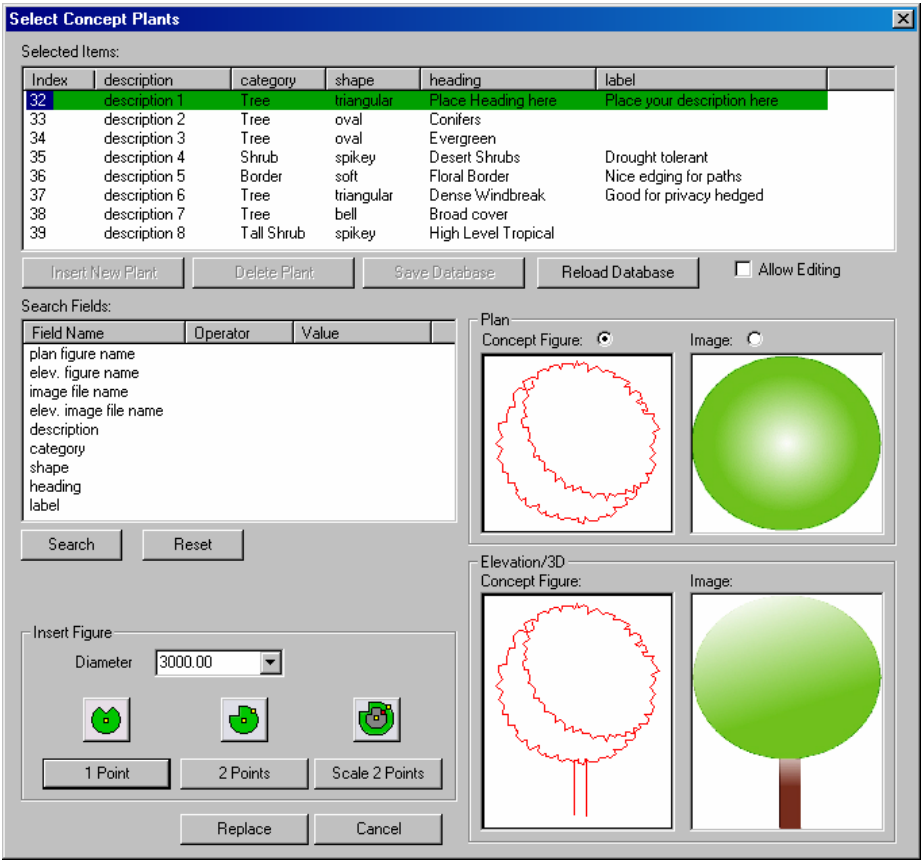
It should be noted that the LANDWorksCAD menu does not necessarily have to appear on the left hand side of the window as shown in previous images. This is the default position only. It can be moved anywhere on the screen and also docked to the edges of the window, just like any standard Windows' window.

Insert Concept Plant

PURPOSE: To select and insert a figure that represents the “concept” of a plant or plants rather than a specific plant, eg, the figure might be used to represent general ground cover before any particular ground cover has been decided upon.

The appropriate type of plant can be searched for and plants that have already been inserted can be replaced.

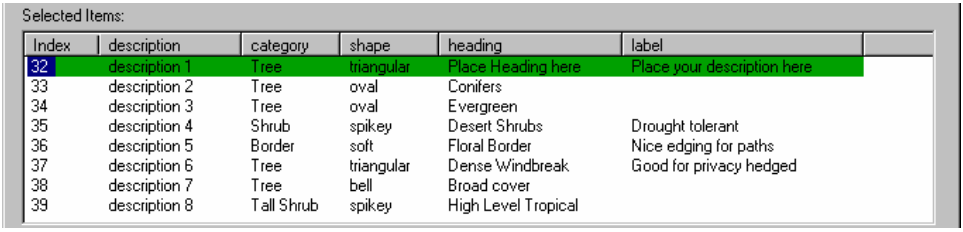
When the command is selected, the following dialog box is displayed.



This command also lets you edit your LANDWorksCAD Excel plant database from within LANDWorksCAD. This is explained at the end of this section. For details on editing your plant database directly in Microsoft Excel, refer to Appendix 2 – Editing the Plant Database in Excel on page 141.

Selecting a Concept Plant

The "**Selected Items**" area at the top of the dialog box lists the plants defined in the "**Concept Plants**" tab of your LANDWorksCAD Excel plant database. This database is called ***LandworksPlantDatabase.xls*** and is found in the LANDWorksCAD folder on your computer. Refer to Appendix 1 – The LANDWorksCAD Plant Database on page 129 for more details on the database.


Selected Items:

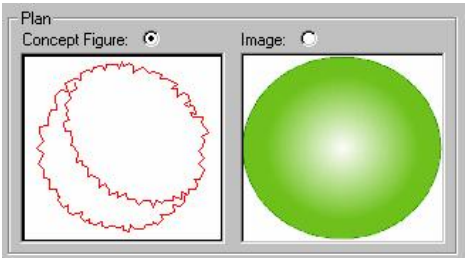
Index	description	category	shape	heading	label
32	description 1	Tree	triangular	Place Heading here	Place your description here
33	description 2	Tree	oval	Conifers	
34	description 3	Tree	oval	Evergreen	
35	description 4	Shrub	spikey	Desert Shrubs	Drought tolerant
36	description 5	Border	soft	Floral Border	Nice edging for paths
37	description 6	Tree	triangular	Dense Windbreak	Good for privacy hedged
38	description 7	Tree	bell	Broad cover	
39	description 8	Tall Shrub	spikey	High Level Tropical	

Note: *The buttons just below the selected items area, ie, "Insert New Plant", "Delete Plant", etc, let you edit your plant database from within LANDWorksCAD and are explained later in the section entitled Editing Concept Plants from within LANDWorksCAD on page 20.*

Scrolling down will show more plants; scrolling sideways will show more data for the plants.

Click once anywhere in the row of data for the plant you want. Preview images of the plant will be displayed in the four, bottom, right hand boxes. Not all of the boxes will necessarily display previews; it depends on what has been defined in your LANDWorksCAD Excel plant database.

The top two previews show the ways the plan view of the plant can be displayed in the drawing. You can switch between these displays whenever you want to after the plant has been inserted – refer to Plant Display Switching on page 81.



The "**Concept Figure**" preview is of a LANDWorksCAD drawing file, ie, it must have been drawn in LANDWorksCAD or created in another CAD program and then imported and saved in LANDWorksCAD.

The "**Image**" preview is of a JPG or BMP (bitmap) format file. This could be an actual photograph of the plant or it could be an artistic representation that has been created outside of LANDWorksCAD using image editing software, eg, PhotoImpact. The JPG format is preferred because file sizes are much smaller.

Having two ways of displaying the plan view of the plant gives you flexibility in how you present your concept drawings and, as stated earlier, you can switch between them whenever you want to.

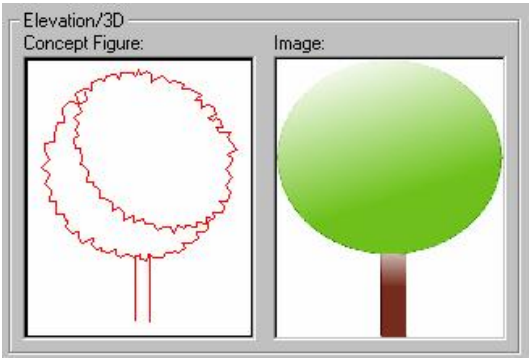
It is up to you to decide how simple or detailed the plan concept figure is.

Likewise it is up to you to decide if the image display is an actual photograph or a computer generated image.

Both plan displays do not have to be created for every plant, though obviously you must use at least one or nothing will be displayed on the screen.

The plan display to be inserted can be selected by clicking in the white dot above the preview so that a smaller black dot appears within it.

The information explained above also pertains to the Elevation/3D previews; the concept figure is a LANDWorksCAD drawing file and the Image is a JPG or BMP file.

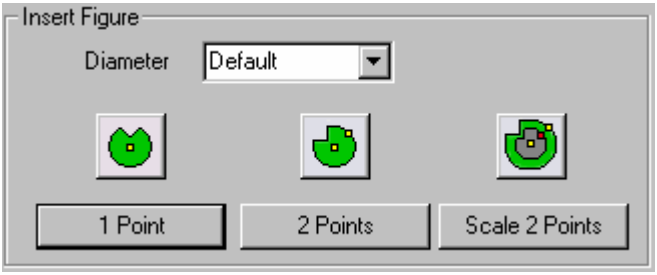


Note: *The Elevation/3D figures cannot be inserted using this command. They can be generated automatically via the Insert 3D Plants command (page 114) or inserted manually (refer to "Figure and Group commands" in the RealCAD-V5 Reference Manual for more information on manually inserting figures).*

Inserting the Selected Concept Plant

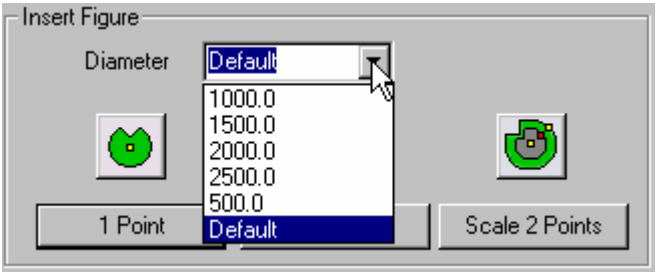
Inserting the selected concept plant is a two step process:

1. Select the diameter of the plant,
2. Insert the plant using the appropriate insertion method



Select the Diameter of the Plant

The diameter of the plant can be selected from the “Diameter” box, as shown below:



If the required diameter is not listed it can simply be typed directly into the box.

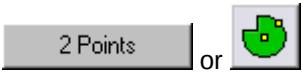
The word “Default” means the plant will be inserted at the size it was originally drawn.

Insert the Plant Using the Appropriate Insertion Method

Once the diameter has been selected, the plant can be inserted into your drawing in three different ways: “1 Point”, “2 Points” or “Scale 2 Points”. These methods are explained below.

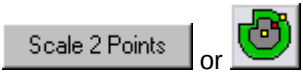
Clicking either of these buttons attaches an image of the plan view of the plant to your crosshair and the plant is inserted where you click your left mouse button.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*



Clicking either of these buttons attaches an image of the plan figure of the plant to your crosshair, but two mouse clicks are required to insert it. The first mouse click positions the plant figure; the second click defines the orientation of the plant, ie, you can spin it around.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*

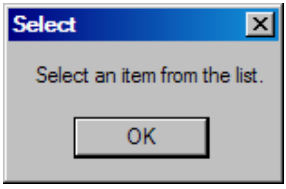


Clicking either of these buttons attaches an image of the plan figure of the plant to your crosshair, but two mouse clicks are required to insert it. The first mouse click positions the plant figure; the second click defines the orientation and size, or scale, of the plant, ie, you can spin it around and you can also make it larger or smaller than the original image.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*

This technique ignores the Diameter box.

***Note**: If a plant has not been selected before any of these buttons are clicked, the following dialog box will be displayed, indicating that a plant must be selected from the "Selected Items" list.*



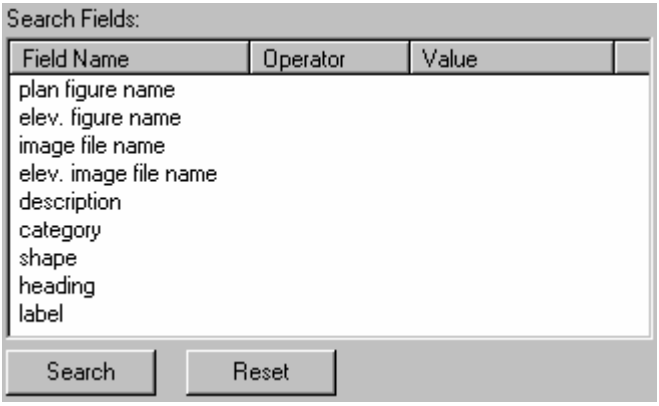
***Tip**: If you want to insert more copies of a plant that you have already inserted you don't have to use this command again, you can simply copy the plants. They will still be recognised as plants from your database. You can use any of the standard ways of copying techniques:*

- *The Translate (Copy) Entities command*
- *The Copy Along command*
- *The Copy Array command*
- *The **Edit** → **Copy** and **Edit** → **Paste** technique*
- *The **CTRL+C** and **CTRL+V** technique*
- *The "**drag the entity while holding down the CTRL key**" technique*

Refer to the RealCAD-V5 Reference Manual for details on commands and techniques.

Searching for Concept Plants

You can search for the plant you want using the **Search Fields** part of the command. You can search on any of the data in the "Concept Plants" sheet of your LANDWorksCAD Excel plant database.

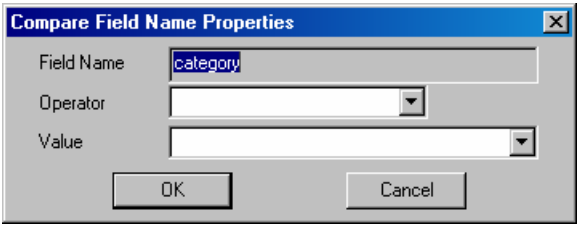


The *Field Name* column lists every column from your database; the *Operator* column controls the range of data you are searching for and the *Value* column provides limits for the search.

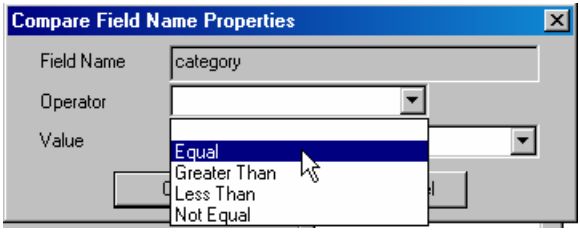
The database can be search in two ways, although they are similar.

Method 1

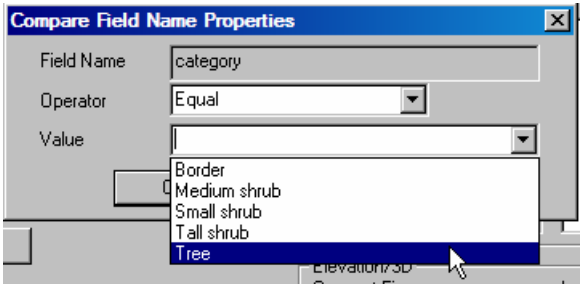
Double-click on the desired Field Name. This activates the "*Compare Field Name Properties*" dialog box as shown below. Here the "*Category*" field was selected.



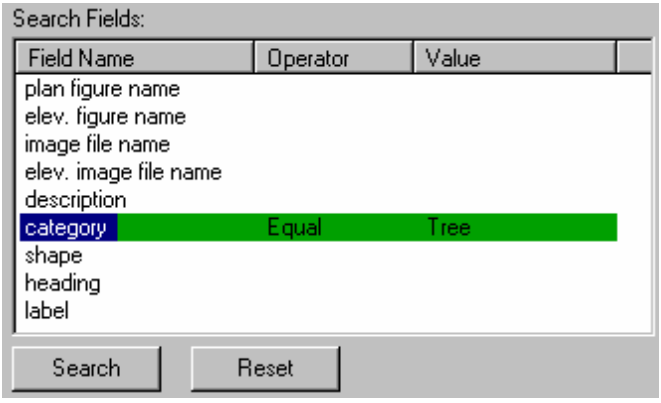
Select the type of search "*Operator*" from the drop-down list, as shown below. Here "*Equal*" is selected.



Select the desired search "*Value*" from the drop-down list as shown below. Here "*Tree*" is selected. The values in the drop-down list will vary depending on the Field Name selected. The values are extracted from your database.

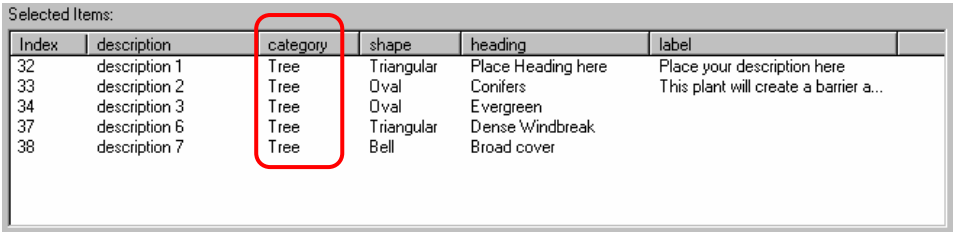


Click *OK* to finish the process. Your Search Fields area will look as shown below.



You may repeat the above steps with other Field Names to create multiple search criteria, eg, you might be searching for all trees that have an oval shape.

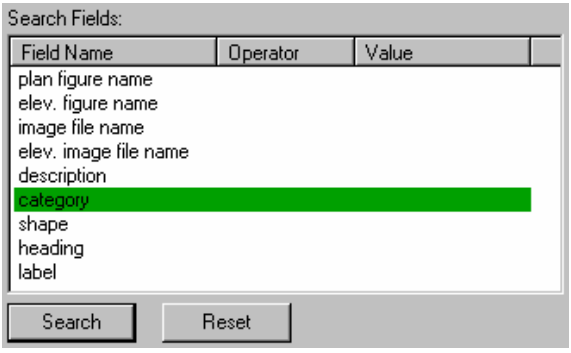
When you're happy with the search criteria, click the "***Search***" button. The Selected Items area will change and display only the items that match the search criteria. For example, the image below shows only Trees.



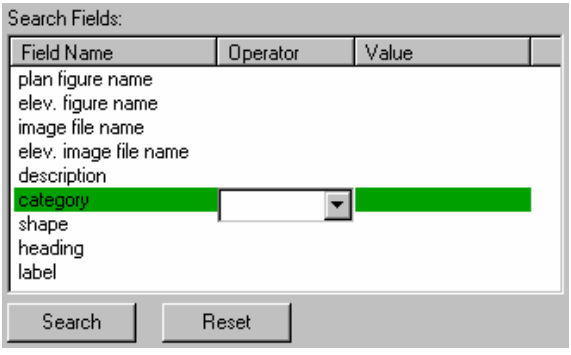
The desired plant can now be selected from the filtered list and inserted as described above.

Method 2

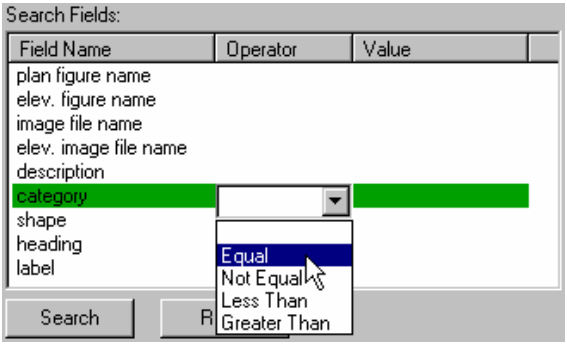
Click once on the desired "*Field Name*". The Field Name will be highlighted as shown below. Here the "*Category*" field was selected.



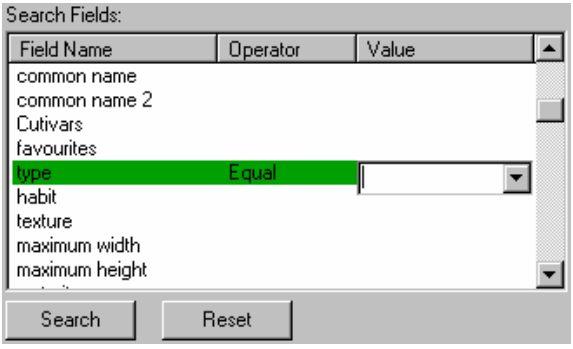
Click in the green highlighting line under the "*Operator*" heading. A drop down field will appear as shown below.



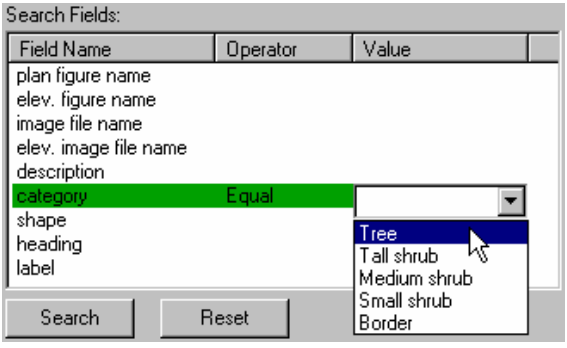
Select the type of search "*Operator*" from the drop-down list, as shown below. Here "*Equal*" is selected.



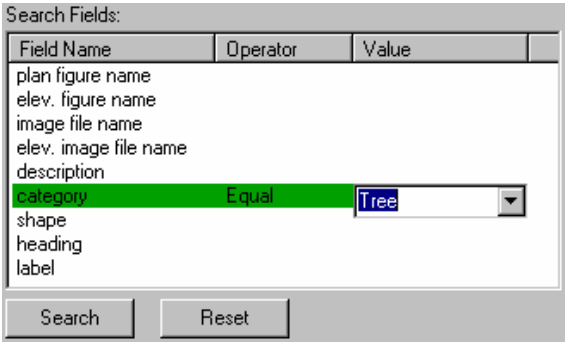
Now click the green highlighting line under the "*Value*" heading. A drop down field will appear as shown below.



Select the desired search "*Value*" from the drop-down list as shown below. Here "*Palm*" is selected. The values in the drop-down list will vary depending on the Field Name selected. The values are extracted from your database.

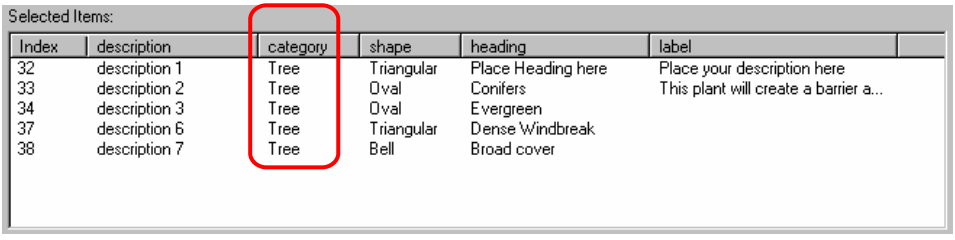


Your Search Fields area will look as shown below.



You may repeat the above steps with other Field Names to create multiple search criteria, eg, you might be searching for all trees that have an oval shape.

When you're happy with the search criteria, click the "***Search***" button. The Selected Items area will now display only the items matching the search criteria, eg, the image below shows only trees.



The desired plant can now be selected from the filtered list and inserted as described above.

Resetting the Search Criteria

To clear the filtered list of plants and display all the plants in the database again, click the "***Reset***" button and then click the "***Search***" button.

Replacing Already Inserted Concept Plants

The “**Replace**” button lets you replace plants that have already been inserted into the drawing with other plants from the database.

This can be done in either of two ways:

1. You can select the plants to be replaced and then run the command, or
2. You can run the command first and then select the plants to be replaced

The two methods are nearly identical. The main difference is in how you can select the plants to be replaced.

Select the plants to be replaced and then run the command

Step 1 – Select the plants that have already been inserted into the drawing. You can use any selection technique for this.

Step 2 – Run the “Insert proposed Plant” command (this command).

Step 3 – Select the replacement plant from the “Selected Items” list.

Step 4 – Click the “**Replace**” button.

The selected plants will be replaced.

Run the command first and then select the plants to be replaced

Step 1 – Run the “Insert proposed Plant” command (this command).

Step 2 – Select the replacement plant from the “Selected Items” list.

Step 3 – Click the “**Replace**” button.

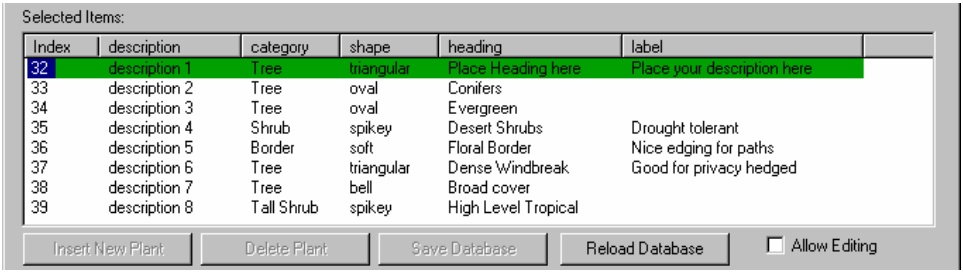
Step 4 – Select the plants that have already been inserted into the drawing. You can only select plants one at a time using this method.

The selected plants will be replaced.

Editing Concept Plants from within LANDWorksCAD

The buttons and tick box displayed just below the "Selected Items" area let you edit your plant database from within LANDWorksCAD. This means you don't actually have to know anything about Microsoft Excel to be able to edit your database. ☺

However, your plant database can also be edited directly in Microsoft Excel. Refer to Appendix 2 – Editing the Plant Database in Excel on page 141 for details.



When the dialog box is displayed, the buttons giving you access to the plant database – "**Insert New Plant**", "**Delete Plant**" and "**Save Database**" – are "greyed-out", ie, they are not accessible. This is to avoid plant data being accidentally edited. The "**Reload Database**" button is available in case the database has been edited in Excel while LANDWorksCAD is open.

> ***Important Note***
> You can edit the database in Excel while LANDWorksCAD is running, but you cannot and must not edit the database from within LANDWorksCAD while the database is open in Excel.
>
> This is not a limitation of LANDWorksCAD; it is a simply how files work in Windows – you cannot work on the same file, at the same time, with two different programs. If the database is open in Excel when you save it from LANDWorksCAD, you will get an error message and LANDWorksCAD will lock up or crash.

To activate the greyed-out buttons and allow editing of your plant database, click the "**Allow Editing**" box, so that a tick is visible. The buttons will then look like this:

You can also edit plants that are already in the database, although there is no specific button for this.

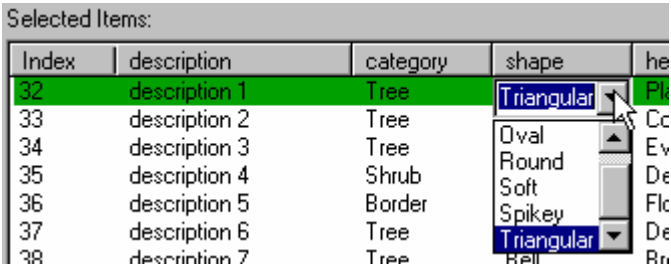
The editing functionality is explained below:

Edit a Concept Plant already in the Database (no button)

To edit the data of a concept plant already in the database simply click on the text and edit it. The row of data will be highlighted in green, except for the specific text to be edited, which will remain white for ease of typing.

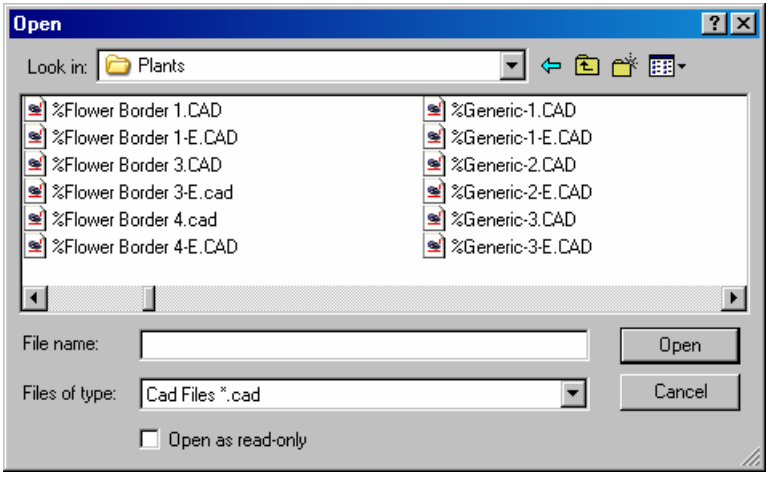
You can also press the Tab key to move to the next column.

Some columns provide a list of data to choose from, indicated by a downward pointing triangle. Clicking on the triangle displays the list, as shown below:



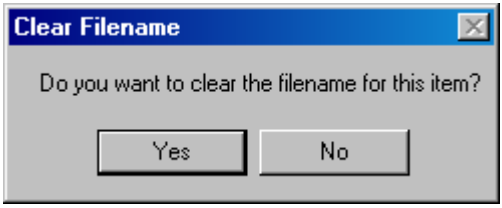
When such a list is available you cannot type in something that is not already in the list; you can only select data from the list. You can, however, edit and add to the list by editing the database in Excel. See Appendix 2 – Editing the Plant Database in Excel on page 141 for details on doing this.

To change the figure or image file for the plant, simply click in the relevant preview box and the following dialog box will be displayed allowing you to browse for the appropriate file.



When you have found the file, select it and click the **Open** button. The file will then be displayed in the preview box.

When you select a plant figure or image using this technique, LANDWorksCAD is editing data to columns you can't see, "behind the scenes". This data is the path and filename of the selected figure/image file. If you cancel the dialog box, the following message will appear:



Click the **Yes** button if you want to completely clear the filename data that was entered, if any. Click the **No** button if you want to retain the filename data that was there, if any.

Notes:

1. When browsing for figures, the "**Files of type**" section of the dialog box is limited to "**Cad Files *.cad**" so you will only see LANDWorksCAD type files. Elevation/3D figures have a "**-E**" at the end of their name for ease of identification.
2. When browsing for image files, the "**Files of type**" section of the dialog box is limited to "**Image Files *.bmp, *.jpg**" so you will only see those types of files. Elevation/3D image files have a "**-E**" at the end of their name for ease of identification.
3. Selecting the appropriate plant figure/image file is a simple process, but there is one important prerequisite – the figure or image file must exist before it can be selected, ie, it must have been drawn/created first.

Important Note
When you have finished editing your plants, it is vitally important that you save the changes to the database by clicking the "**Save Database**" button (see below). If you don't, you will lose the changes.

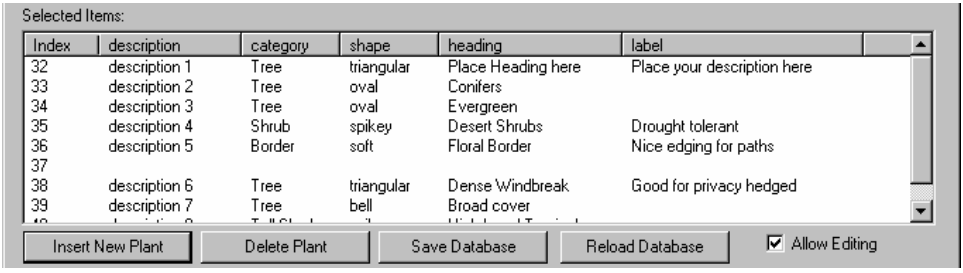
Insert New Plant

There are two stages to inserting a new plant:

1. Entering the data, and
2. Selecting the appropriate figures and image files

Entering the data

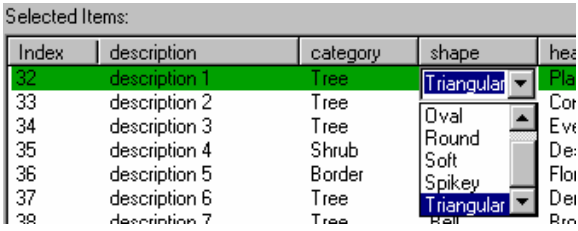
When the "**Insert New Plant**" button is clicked, a blank row is inserted above the plant that is currently selected in the "Selected Items" list. The relevant data for the new plant can then be typed in.



To enter the data, click on the blank row, in the column you want to edit and type in the required data. When you select the blank row it will be highlighted in green, but the part of the row in the column you selected will remain white.

You can also press the Tab key to move to the next column.

Some columns provide a list of data to choose from, indicated by a downward pointing triangle. Clicking on the triangle displays the list, as shown below:



When such a list is available you cannot type in something that is not already in the list; you can only select data from the list. You can, however, edit and add to the list by editing the database in Excel. Appendix 2 – Editing the Plant Database in Excel on page 141 for details on doing this.

Multiple new plants can be inserted by simply clicking the button again and entering the data.

It's up to you to decide how much data you enter. Most columns are not compulsory. Refer to Appendix 1 – The LANDWorksCAD Plant Database on page 129 for details on the database.

Selecting the appropriate figures and image files

Once the botanical data has been entered, appropriate LANDWorksCAD figures and image files must be selected to represent the plant in the drawing.

To select the plant figure or image file, simply click in the relevant preview box and browse and select the appropriate file, as described in the Edit a Concept Plant already in the Database (no button) section above.

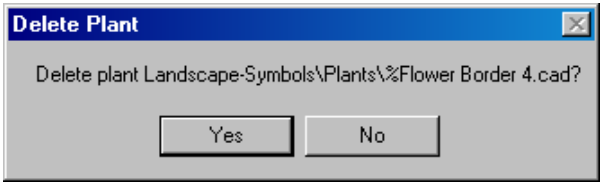
Note that both of the preview boxes do not have to be filled in, but at least one must be, otherwise there will be nothing to see when the plant is inserted. ☺

The Elevation/3D figures and images are not required at all if you are only working in 2D.

> ***Important Note***
> When you have finished inserting your plants, it is vitally important that you save them to the database by clicking the "**Save Database**" button (see below). If you don't, you will lose them.

Delete Plant

To delete a plant, select the plant by clicking anywhere in its row and then click the "**Delete Plant**" button. The following confirmation dialog box will appear (with the appropriate plant name, of course):



Click the **Yes** button to confirm you want to delete the plant from the database. Click the **No** button if you do not want to delete the plant.

Important Note
When you have finished deleting plants, it is vitally important that you save the changes to the database by clicking the "**Save Database**" button (see below). If you don't, the plants will not be permanently deleted.

Save Database

After you have done any editing, inserting or deleting of plants, you should click the "**Save Database**" button so the changes are stored permanently in the database. If you don't, the changes will not be remembered by LANDWorksCAD, ie, plants you thought you added to the database will not be there, plants you thought you deleted will still be there, etc.

Reminder Note
You can edit the database in Excel while LANDWorksCAD is running, but you cannot and must not edit the database from within LANDWorksCAD while the database is open in Excel.

This is not a limitation of LANDWorksCAD; it is a simply how files work in Windows – you cannot work on the same file, at the same time, with two different programs. If the database is open in Excel when you save it from LANDWorksCAD, you will get an error message and LANDWorksCAD will lock up or crash.

Reload Database

Clicking the "**Reload Database**" button forces LANDWorksCAD to re-read the plant database and show any changes that have occurred since LANDWorksCAD started.

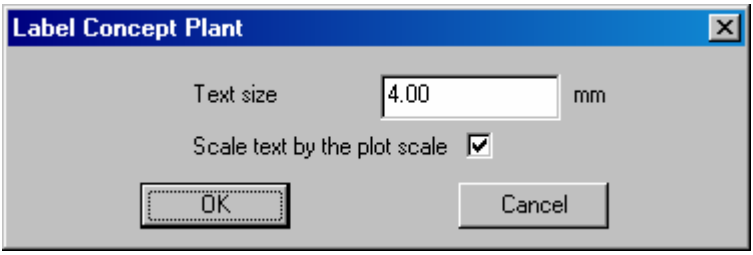
This would be necessary if the database was edited in Excel while LANDWorksCAD was running.

It would also be necessary if you have been editing the plant database from within LANDWorksCAD and have made a few mistakes (it does happen! ☺) and want to start again.

Label Concept Plant

PURPOSE: To label concept plants inserted from the LANDWorksCAD Excel plant database (using the Insert Concept Plant command – refer to previous section) for identification on the landscape drawing.

When the command is selected, the following dialog box is displayed.



Text Size

This box lets you define the size of the label text. Text size is influenced by the next option, Scale Text by the Plot Scale and can work in either of the following two ways

1. If the Scale Text by the Plot Scale option is ticked, then the text size entered is automatically multiplied by the view's Plot Scale and the text is displayed on the screen at that scaled size.

   For example, if a text size of 4mm is entered and the Plot Scale is 100, the text will be displayed on screen at 400mm high.

   This technique lets you define the text size based on the height you want it to be when it is printed on paper. If the Plot Scale is changed for some reason, the on-screen text height will automatically adjust, but, providing you print the drawing at the specified Plot Scale, the text will always print at the height specified.

   For example, a text height of 4mm and a Plot Scale of 100 produces on-screen text at 400mm high. Printing the drawing at a scale of 1:100 will produce text 4mm high on the paper. Change the Plot Scale to 200 and the on-screen text will become 800mm high, but printing the drawing at a scale of 1:200 will still produce text 4mm high on the paper.

2. If the Scale Text by the Plot Scale option is not ticked, then the text size entered is the on-screen height. It is not, in any way, affected by the view's Plot Scale.

For the text to be visible on the screen, the size must be calculated accordingly.

This technique will produce printed text of a different size if the Plot Scale is changed.

For example, if a text height of 400mm is specified and the Plot Scale is 100, the printed text will be 4mm high, but if the Plot Scale is changed to 200, the printed text would be 2mm high.

Scale Text by the Plot Scale

This tick box controls whether the text size entered is automatically multiplied by the view's Plot Scale for on-screen display. Refer to the previous section, Text Size for more details.

Inserting the Label

When the **OK** button is clicked, LANDWorksCAD scans the drawing for any concept plants that haven't been labelled. If it finds some, it highlights in grey the last plant inserted and its label is attached to your crosshair letting you position it where it suits you.

The label for the plant is comprised of the text in the "Heading" and "Label" columns of the plant database. These columns are displayed in the "Selected Items" area of the "Insert Concept Plant" dialog box.

When you have placed the label for that concept plant, if there are any others that have not been labelled, the next one is highlighted, its label attached to your crosshair and so on.

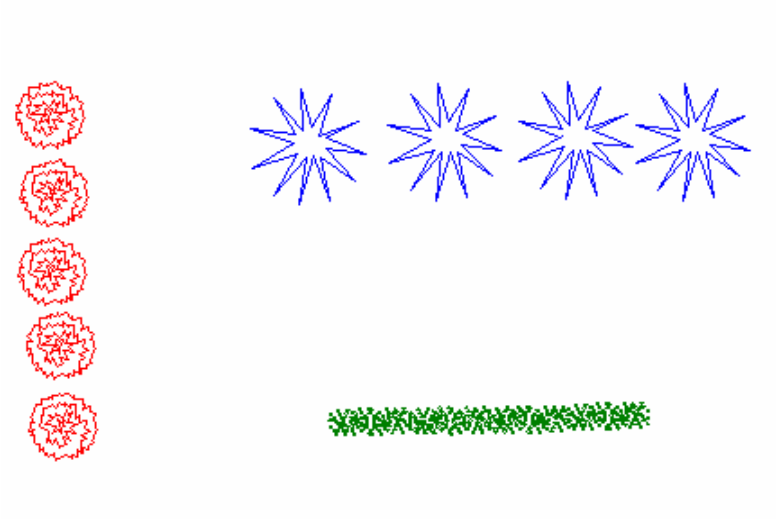
Note: You do not have to select the plants at any stage

Note: The selection of plants is done in reverse order, ie, the last plant inserted is highlighted first, then the second last plant inserted, etc.

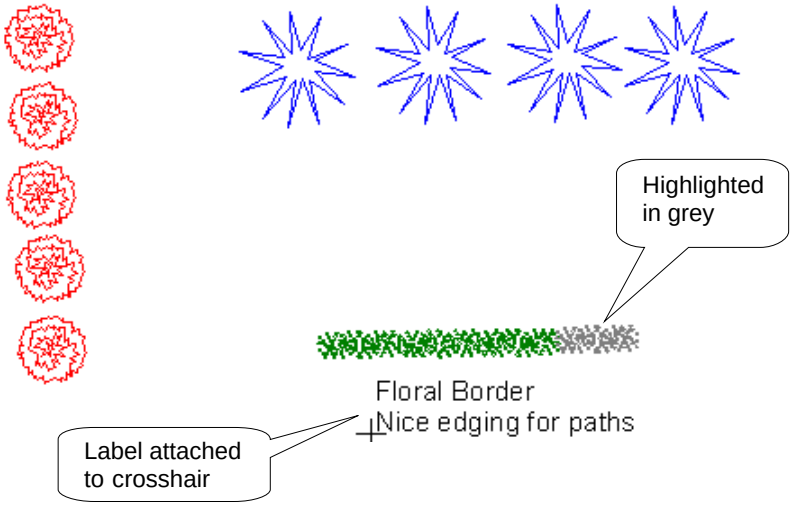
Note: If you have the same concept plants inserted at various positions on the drawing, you will only be able to label one group of them using this command. To label the other groups of plants, simply copy the labels.

The following steps show how the command works.

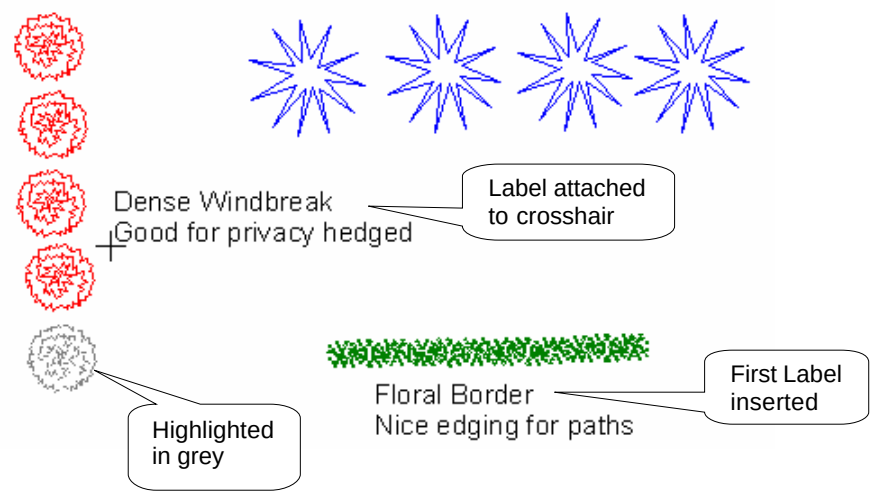
In the image below the blue concept plants were inserted first, then the red ones and then the green ones, so they will be labelled in the reverse order to that. (the colours are not important; they are only used here for identification purposes)



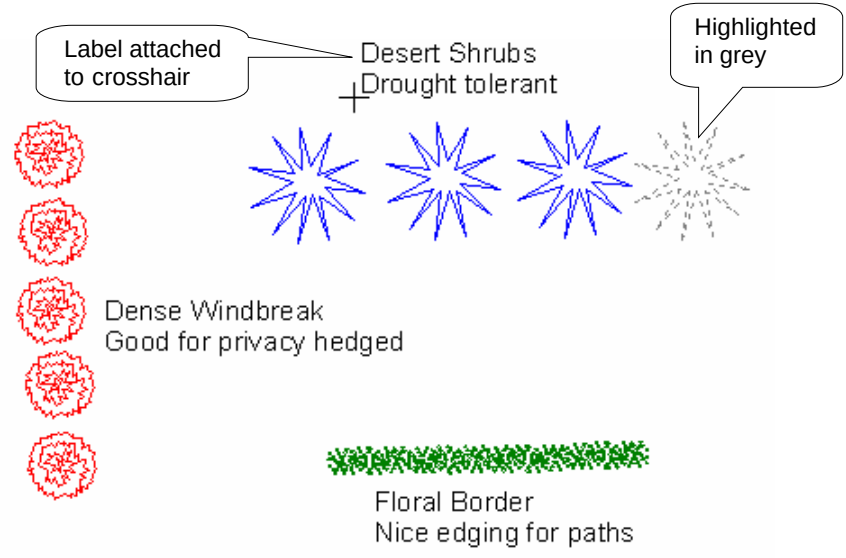
The command is selected and the text properties set. When the OK button is clicked, the last green plant is highlighted in grey and its label attached to the crosshair, as shown below.



When the first label is inserted, the next concept plant is highlighted (red) and its label is attached to the crosshair, as shown below.



When the second label is inserted, the next concept plant is highlighted (blue) and its label is attached to the crosshair, as shown below. This would, of course, continue if there were more plants that had not be labelled.

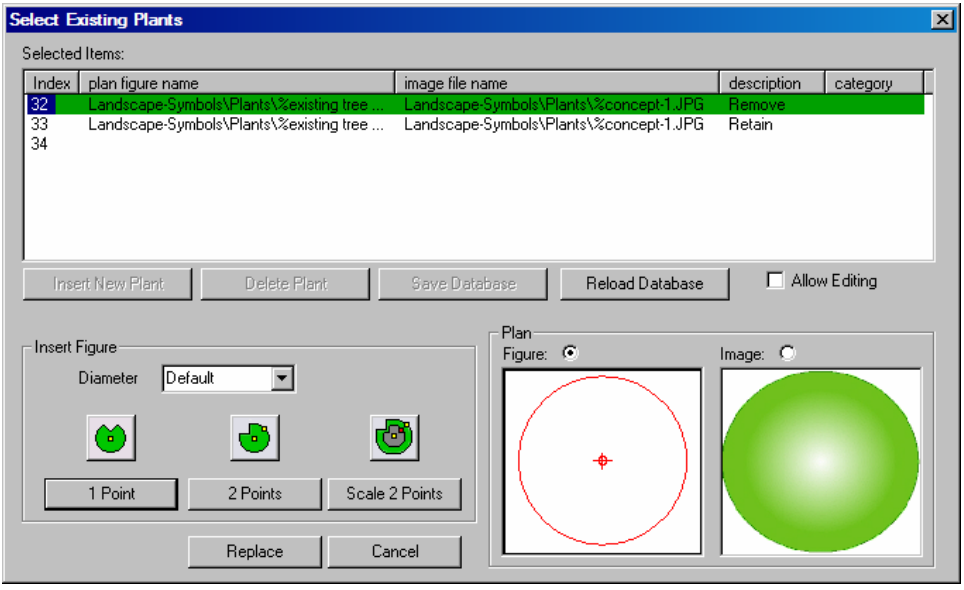


When the last label has been inserted, the command stops.

Insert Existing Plant

PURPOSE: To select and insert a figure to represent the plant(s) in your landscape plan that already exist on-site.

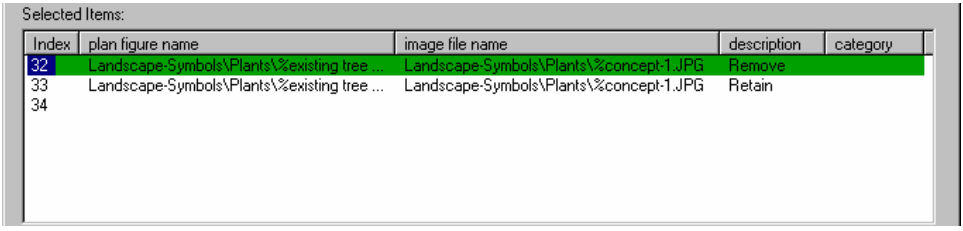
When the command is selected, the following dialog box is displayed.



This command also lets you edit your LANDWorksCAD Excel plant database from within LANDWorksCAD. This is explained at the end of this section. For details on editing your plant database directly in Microsoft Excel, refer to Appendix 2 – Editing the Plant Database in Excel on page 141.

Selecting an Existing Plant

The "**Selected Items**" area at the top of the dialog box lists the plants defined in the "**Existing Plants**" tab of your LANDWorksCAD Excel plant database. This database is called ***LandworksPlantDatabase.xls*** and is found in the LANDWorksCAD folder on your computer. Refer to Appendix 1 – The LANDWorksCAD Plant Database on page 129 for more details on the database.

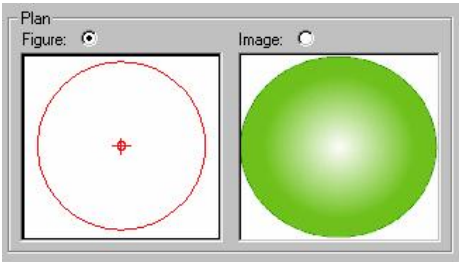


Note: *The buttons just below the selected items area, ie, "Insert New Plant", "Delete Plant", etc, let you edit your plant database from within LANDWorksCAD and are explained later in the section entitled Editing Existing Plants from within LANDWorksCAD on page 36.*

Scrolling down will show more plants; scrolling sideways will show more data for the plants (if necessary).

Click once anywhere in the row of data for the plant you want. Preview images of the plant will be displayed in the two, bottom, right hand boxes. Both of the boxes will not necessarily display previews; it depends on what has been defined in your LANDWorksCAD Excel plant database.

The two previews show the ways the plan view of the plant can be displayed in the drawing. You can switch between these displays whenever you want to after the plant has been inserted – refer to the Plant Display Switching command on page 81.



The "**Figure**" preview is of a LANDWorksCAD drawing file, ie, it must have been drawn in LANDWorksCAD or created in another CAD program and then imported and saved in LANDWorksCAD.

The “**Image**” preview is of a JPG or BMP (bitmap) format file. This could be an actual photograph of the plant or it could be an artistic representation that has been created outside of LANDWorksCAD using image editing software, eg, PhotoImpact. The JPG format is preferred because file sizes are much smaller.

Having two ways of displaying the plan view of the plant gives you flexibility in how you present your concept drawings and, as stated earlier, you can switch between them whenever you want to.

It is up to you to decide how simple or detailed the plan concept figure is.

Likewise it is up to you to decide if the image display is an actual photograph or a computer generated image.

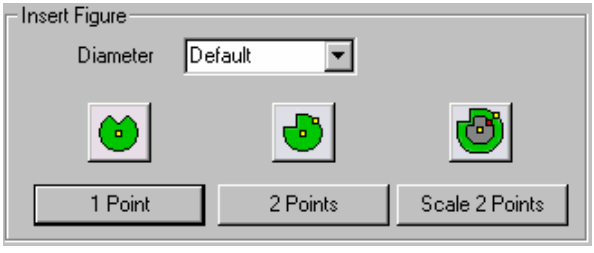
Both plan displays do not have to be created for every plant, though obviously you must use at least one or nothing will be displayed on the screen.

The plan display to be inserted can be selected by clicking in the white dot above the preview so that a smaller black dot appears within it.

Inserting the Selected Existing Plant

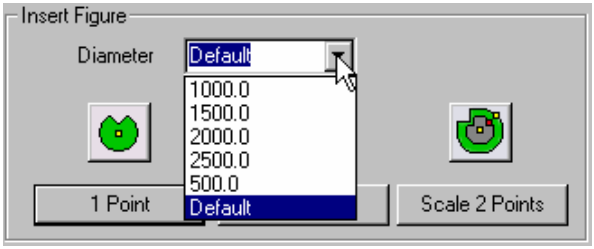
Inserting the selected existing plant is a two step process:

1. Select the diameter of the plant,
2. Insert the plant using the appropriate insertion method



Select the Diameter of the Plant

The diameter of the plant can be selected from the “Diameter” box, as shown below:



If the required diameter is not listed it can simply be typed directly into the box.

The word “Default” means the plant will be inserted at the size it was originally drawn.

Insert the Plant Using the Appropriate Insertion Method

Once the diameter has been selected, the plant can be inserted into your drawing in three different ways: “1 Point”, “2 Points” or “Scale 2 Points”. These methods are explained below.

***Note**: If you intend to label the existing plants using the Label Existing Plant command (page 42), it is not really important which of the following insertion techniques are used because the figure will be automatically re-sized to match the data entered.*

Clicking either of these buttons attaches an image of the plan view of the plant to your crosshair and the plant is inserted where you click your left mouse button.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*

Clicking either of these buttons attaches an image of the plan figure of the plant to your crosshair, but two mouse clicks are required to insert it. The first mouse click positions the plant figure; the second click defines the orientation of the plant, ie, you can spin it around.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*

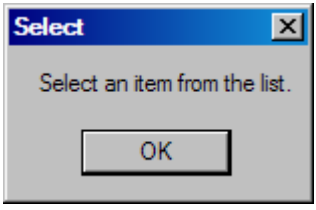
or

Clicking either of these buttons attaches an image of the plan figure of the plant to your crosshair, but two mouse clicks are required to insert it. The first mouse click positions the plant figure; the second click defines the orientation and size, or scale, of the plant, ie, you can spin it around and you can also make it larger or smaller than the original image.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won't actually appear until you click.*

This technique ignores the Diameter box.

***Note**: If a plant has not been selected before any of these buttons are clicked, the following dialog box will be displayed, indicating that a plant must be selected from the "Selected Items" list.*



***Tip**: If you want to insert more copies of a plant that you have already inserted you don't have to use this command again, you can simply copy the plants. They will still be recognised as plants from your database. You can use any of the standard ways of copying techniques:*

- *The Translate (Copy) Entities command*
- *The Copy Along command*
- *The Copy Array command*
- *The **Edit → Copy** and **Edit → Paste** technique*
- *The **CTRL+C** and **CTRL+V** technique*
- *The "**drag the entity while holding down the CTRL key**" technique*

*Refer to the "**RealCAD** V5.x **Reference and User Manual**" for details on commands and techniques.*

Replacing Already Inserted Existing Plants

The "**Replace**" button lets you replace plants that have already been inserted into the drawing with other plants from the database.

This can be done in either of two ways:

1. You can select the plants to be replaced and then run the command, or
2. You can run the command first and then select the plants to be replaced

The two methods are nearly identical. The main difference is in how you can select the plants to be replaced.

Select the plants to be replaced and then run the command

Step 1 – Select the plants that have already been inserted into the drawing. You can use any selection technique for this.

Step 2 – Run the "Insert proposed Plant" command (this command).

Step 3 – Select the replacement plant from the "Selected Items" list.

Step 4 – Click the "**Replace**" button.

The selected plants will be replaced.

Run the command first and then select the plants to be replaced

Step 1 – Run the "Insert proposed Plant" command (this command).

Step 2 – Select the replacement plant from the "Selected Items" list.

Step 3 – Click the "**Replace**" button.

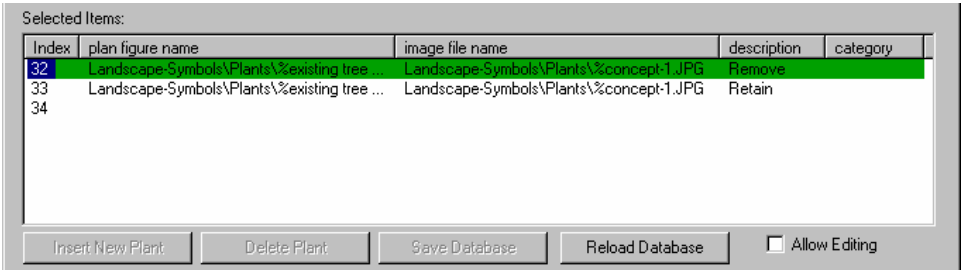
Step 4 – Select the plants that have already been inserted into the drawing. You can only select plants one at a time using this method.

The selected plants will be replaced.

Editing Existing Plants from within LANDWorksCAD

The buttons and tick box displayed just below the "Selected Items" area let you edit your plant database from within LANDWorksCAD. This means you don't actually have to know anything about Microsoft Excel to be able to edit your database. ☺

However, your plant database can also be edited directly in Microsoft Excel. Refer to Appendix 2 – Editing the Plant Database in Excel on page 141 for details.



When the dialog box is displayed, the buttons giving you access to the plant database – "**Insert New Plant**", "**Delete Plant**" and "**Save Database**" – are "greyed-out", ie, they are not accessible. This is to avoid plant data being accidentally edited. The "**Reload Database**" button is available in case the database has been edited in Excel while LANDWorksCAD is open.

Important Note

You can edit the database in Excel while LANDWorksCAD is running, but you cannot and must not edit the database from within LANDWorksCAD while the database is open in Excel.

This is not a limitation of LANDWorksCAD; it is a simply how files work in Windows – you cannot work on the same file, at the same time, with two different programs. If the database is open in Excel when you save it from LANDWorksCAD, you will get an error message and LANDWorksCAD will lock up or crash.

To activate the greyed-out buttons and allow editing of your plant database, click the "**Allow Editing**" box, so that a tick is visible. The buttons will then look like this:

You can also edit plants that are already in the database, although there is no specific button for this.

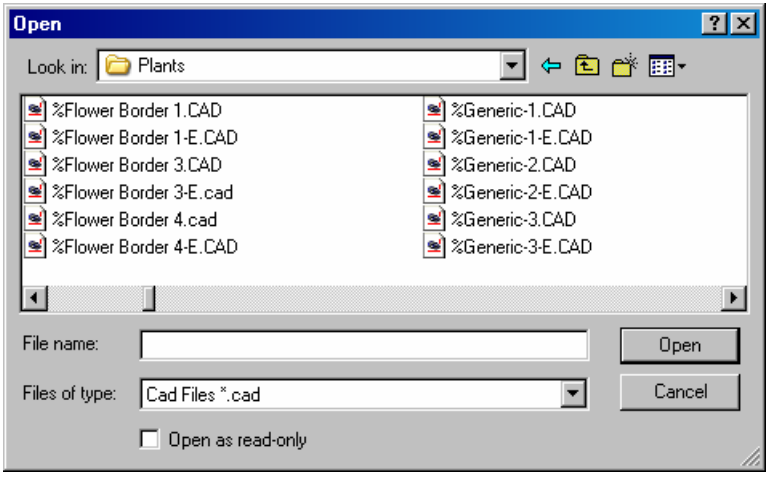
The editing functionality is explained below:

Edit an Existing Plant already in the Database (no button)

To edit the data of an existing plant already in the database simply click on the text and edit it. The row of data will be highlighted in green, except for the specific text to be edited, which will remain white for ease of typing.

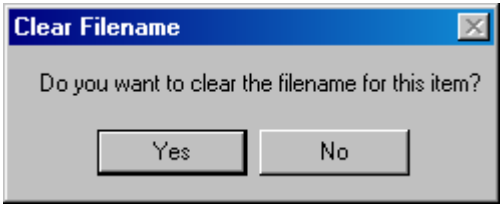
You can also press the Tab key to move to the next column.

To change the figure or image file for the plant, simply click in the relevant preview box and the following dialog box will be displayed allowing you to browse for the appropriate file.



When you have found the file, select it and click the **Open** button. The file will then be displayed in the preview box.

When you select a plant figure or image using this technique, LANDWorksCAD is editing data to columns you can't see, "behind the scenes". This data is the path and filename of the selected figure/image file. If you cancel the dialog box, the following message will appear:



Click the **Yes** button if you want to completely clear the filename data that was entered, if any. Click the **No** button if you want to retain the filename data that was there, if any.

Notes:

1. When browsing for figures, the "**Files of type**" section of the dialog box is limited to "**Cad Files *.cad**" so you will only see LANDWorksCAD type files.
2. When browsing for image files, the "**Files of type**" section of the dialog box is limited to "**Image Files *.bmp, *.jpg**" so you will only see those types of files.
3. Selecting the appropriate plant figure/image file is a simple process, but there is one important prerequisite – the figure or image file must exist before it can be selected, ie, it must have been drawn/created first.

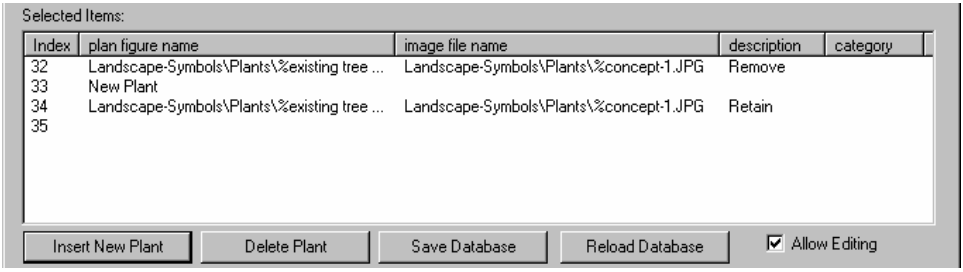
> ***Important Note***
> When you have finished editing your plants, it is vitally important that you save the changes to the database by clicking the "**Save Database**" button (see below). If you don't, you will lose the changes.

Insert New Plant

There are two stages to inserting a new plant:

1. Entering the data, and
2. Selecting the appropriate figures and image files

Entering the data
When the "**Insert New Plant**" button is clicked, a blank row is inserted above the plant that is currently selected in the "Selected Items" list. The relevant data for the new plant can then be typed in.



To enter the data, click on the blank row, in the column you want to edit and type in the required data. When you select the blank row it will be highlighted in green, but the part of the row in the column you selected will remain white.

You can also press the Tab key to move to the next column.

Multiple new plants can be inserted by simply clicking the button again and entering the data.

It's up to you to decide how much data you enter. Most columns are not compulsory. Refer to Appendix 1 – The LANDWorksCAD Plant Database on page 129 for details on the database.

Selecting the appropriate figures and image files

Once the botanical data has been entered, appropriate LANDWorksCAD figures and image files must be selected to represent the plant in the drawing.

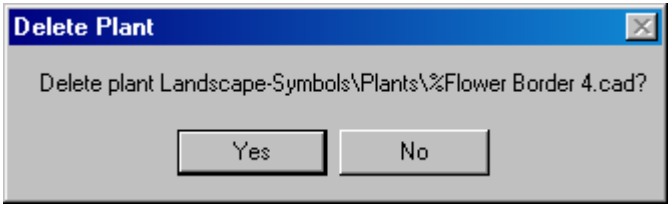
To select the plant figure or image file, simply click in the relevant preview box and browse and select the appropriate file, as described in the Edit an Existing Plant already in the Database (no button) section above.

Note that both of the preview boxes do not have to be filled in, but at least one must be, otherwise there will be nothing to see when the plant is inserted. ☺

> ***Important Note***
> When you have finished inserting your plants, it is vitally important that you save them to the database by clicking the "**Save Database**" button (see below). If you don't, you will lose them.

Delete Plant

To delete a plant, select the plant by clicking anywhere in its row and then click the "**Delete Plant**" button. The following confirmation dialog box will appear (with the appropriate plant name, of course)



Click the **Yes** button to confirm you want to delete the plant from the database. Click the **No** button if you do not want to delete the plant.

Important Note
When you have finished deleting plants, it is vitally important that you save the changes to the database by clicking the "**Save Database**" button (see below). If you don't, the plants will not be permanently deleted.

Save Database

After you have done any editing, inserting or deleting of plants, you should click the "**Save Database**" button so the changes are stored permanently in the database. If you don't, the changes will not be remembered by LANDWorksCAD, ie, plants you thought you added to the database will not be there, plants you thought you deleted will still be there, etc.

Reminder Note
You can edit the database in Excel while LANDWorksCAD is running, but you cannot and must not edit the database from within LANDWorksCAD while the database is open in Excel.

This is not a limitation of LANDWorksCAD; it is a simply how files work in Windows – you cannot work on the same file, at the same time, with two different programs. If the database is open in Excel when you save it from LANDWorksCAD, you will get an error message and LANDWorksCAD will lock up or crash.

Reload Database

Clicking the "**Reload Database**" button forces LANDWorksCAD to re-read the plant database and show any changes that have occurred since LANDWorksCAD started.

This would be necessary if the database was edited in Excel while LANDWorksCAD was running.

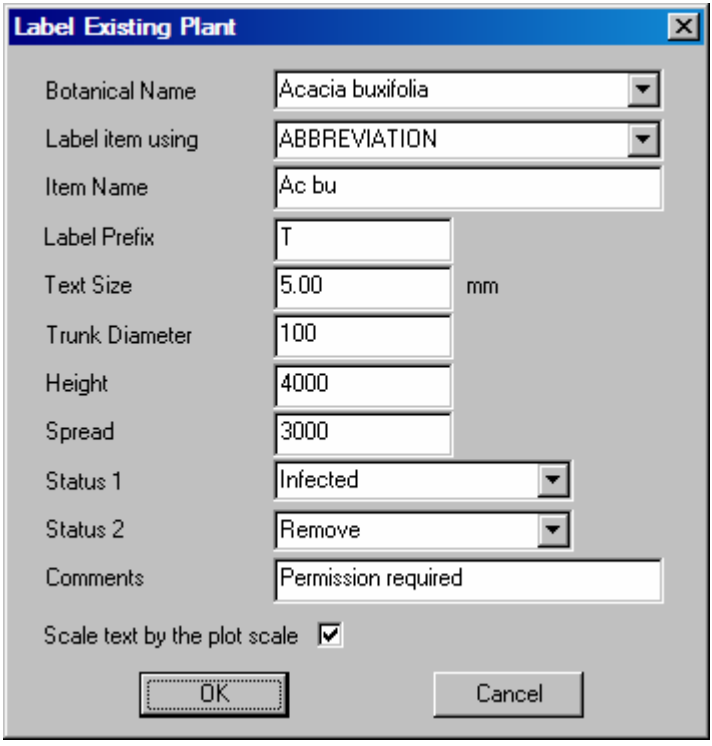
It would also be necessary if you have been editing the plant database from within LANDWorksCAD and have made a few mistakes (it does happen! ☺) and want to start again.

Label Existing Plant

PURPOSE: To label existing plants inserted from the LANDWorksCAD Excel plant database (using the Insert Existing Plant command – refer to previous section) for identification on the landscape drawing and for inclusion in a schedule of existing plants.

The data entered in this command is the data typically collected when the client's property is surveyed.

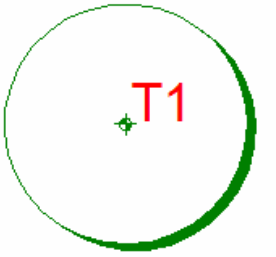
When the command is selected, the following dialog box is displayed.



The "Label Prefix" is used to actually label the plant; the other data will be displayed in the "Existing Plant Schedule" when it is inserted. (refer to the Existing Plant Schedule command on page 49)

***Note**: For an existing plant figure to be included in the Existing Plant Schedule it MUST be labelled with this command first.*

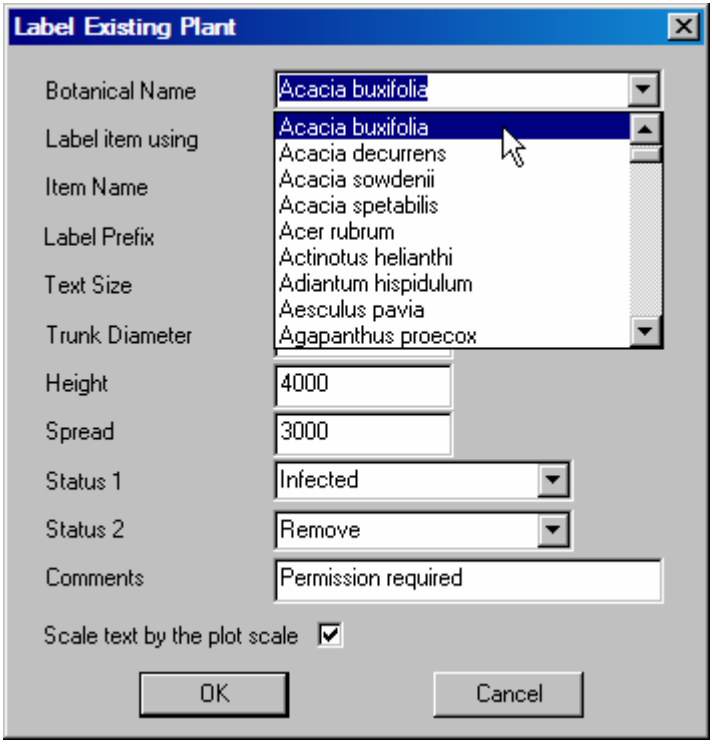
An example of a label is shown below – the “T1” text.



Botanical Name

This box lets you choose the botanical name of the existing plant you are about to label.

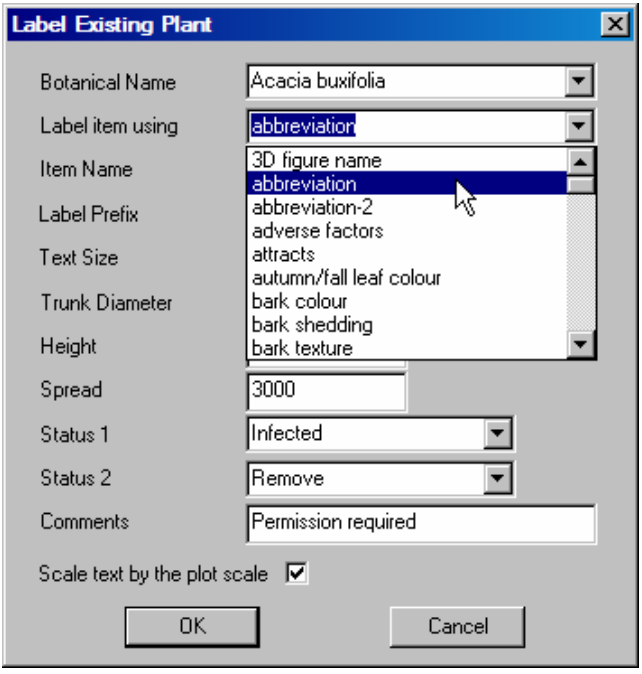
Clicking on the triangle at the end of the box displays a list of the botanical names from your plant database, as shown below:



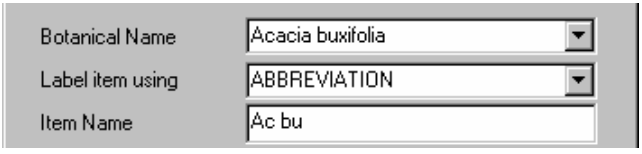
Label Item Using

This box lets you choose which data from the database will be used to identify the existing plant in the Existing Plant Schedule.

Clicking on the triangle at the end of the box displays a list of the field names from your plant database, as shown below:



In the example below, the tree being labelled is an Acacia buxifolia, but it will be identified in the Existing Plant Schedule with its abbreviation, ie, Ac bu.



Item Name

This box displays the actual identifying text that will be displayed in the Existing Plant Schedule, eg, “Ac bu” in the example above.

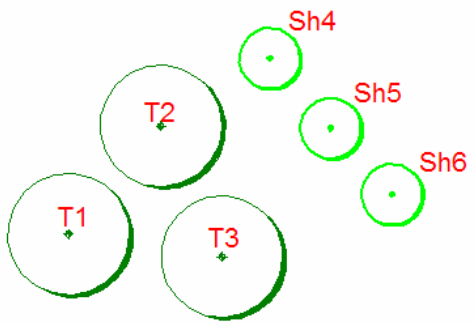
Label Prefix

This box lets you enter text that will be displayed as a label for the plant on the drawing. Any amount of text can be entered.

Numbers are automatically appended to the prefix, ensuring the labels are unique.

Typically the prefix would be a code to identify the type of plant, eg, “T” for tree, “S” for shrub, etc, but it can be anything.

Examples are shown below.



Text Size

This box lets you define the size of the label text. Text size is influenced by the bottom tick box, Scale Text by the Plot Scale and can work in either of the following two ways

1. If the Scale Text by the Plot Scale option is ticked, then the text size entered is automatically multiplied by the view’s Plot Scale and the text is displayed on the screen at that scaled size.

   For example, if a text size of 4mm is entered and the Plot Scale is 100, the text will be displayed on screen at 400mm high.

   This technique lets you define the text size based on the height you want it to be when it is printed on paper. If the Plot Scale is changed for some reason, the on-screen text height will automatically adjust, but, providing you print the drawing at the specified Plot Scale, the text will always print at the height specified.

   For example, a text height of 4mm and a Plot Scale of 100 produces on-screen text at 400mm high. Printing the drawing at a scale of 1:100 will produce text 4mm high on the paper. Change the Plot Scale to 200 and the on-screen text will become 800mm high, but printing the drawing at a scale of 1:200 will still produce text 4mm high on the paper.

2. If the Scale Text by the Plot Scale option is not ticked, then the text size entered is the on-screen height. It is not, in any way, affected by the view's Plot Scale.

   For the text to be visible on the screen, the size must be calculated accordingly.

   This technique will produce printed text of a different size if the Plot Scale is changed.

   For example, if a text height of 400mm is specified and the Plot Scale is 100, the printed text will be 4mm high, but if the Plot Scale is changed to 200, the printed text would be 2mm high.

Trunk Diameter

This box lets you enter the actual diameter of the trunk of the plant, in mm, as measured on site.

Height

This box lets you enter the actual height of the plant, in mm, as measured on site.

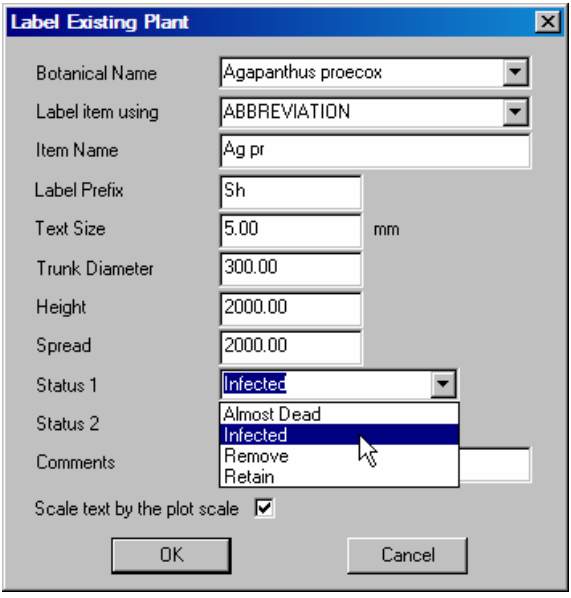
Spread

This box lets you enter the actual spread, or foliage diameter, of the plant, in mm, as measured on site. The value of the 'Spread' is used to automatically re-size the selected figure to the correct diameter.

Status 1

This box lets you select from four, standard, predefined status notes to be included in the Existing Plant Schedule.

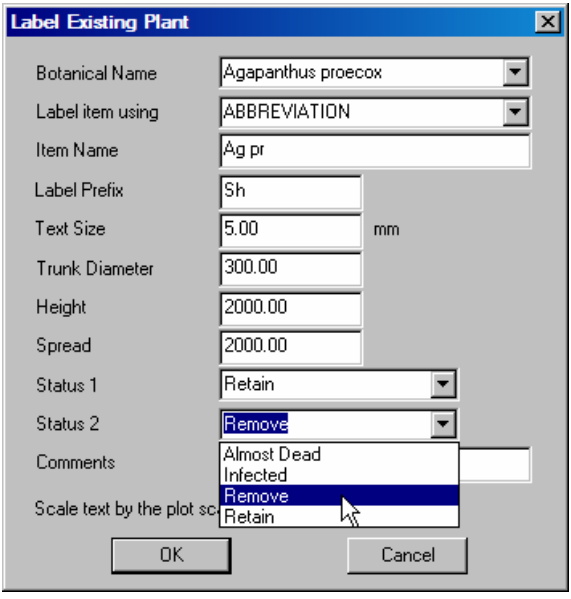
Clicking on the triangle at the end of the box displays the four notes, as shown below. Simply delete the note if you do not want it included in the schedule.



Status 2

This box lets you select from four, standard, predefined status notes to be included in the Existing Plant Schedule.

Clicking on the triangle at the end of the box displays the four notes, as shown below. Simply delete the note if you do not want it included in the schedule.



Comments

This box lets you type in additional information to be included in the Existing Plant Schedule. The amount of text is not limited by the width of the box.

Scale Text by the Plot Scale

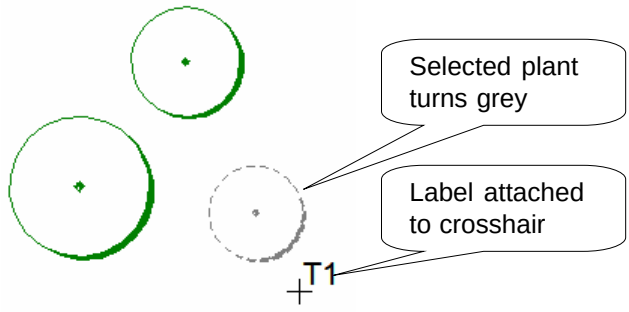
This tick box controls whether the text size entered is automatically multiplied by the view's Plot Scale for on-screen display. Refer to the earlier section, Text Size, for more details.

Inserting the Label

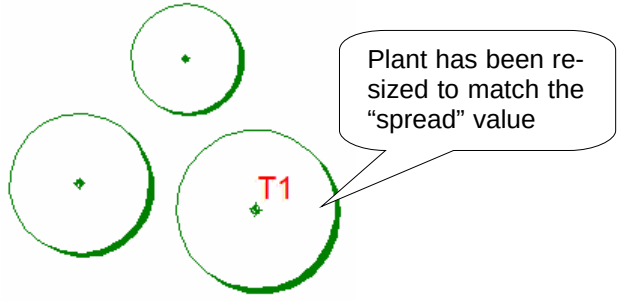
When the **OK** button is clicked, the steps to label the plant are as follows:

1. Select the plant to label.

   When the plant is selected, it turns grey and the prefix label and number are attached to your crosshair, as shown below.



2. Position the label and click to insert it.
3. The label is inserted and the figure is re-sized to match the "spread" value entered, as shown below.



4. The command is automatically re-run, letting you label more plants.

Existing Plant Schedule

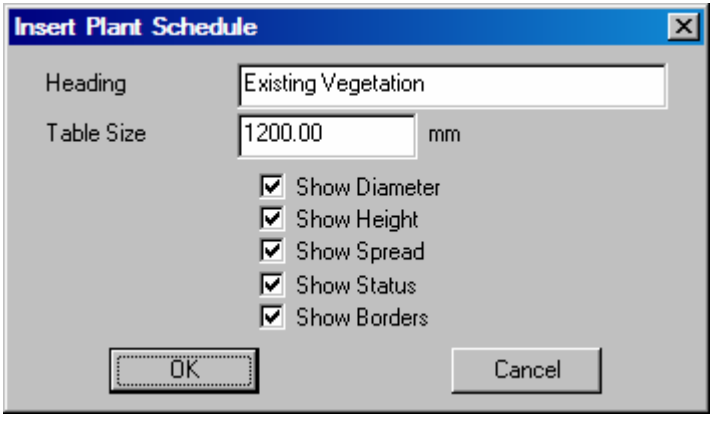
PURPOSE: To automatically generate a schedule of existing plants based on the criteria entered using the Label Existing Plant command.

***Note**: For an existing plant figure to be included in the Existing Plant Schedule it MUST be labelled with Label Existing Plant command first.*

A sample Legend is shown below.

Existing Vegetation							
No	Species	Trunk Diam	Height	Spread	Status		
S1	Ac bu	100mm	3000mm	3000mm	Retain		
S2	Ba er	75mm	4000mm	3000mm	Retain		
T3	Eu ma	300mm	10000mm	6000mm	Retain		
T4	Sc ac	200mm	7000mm	3000mm	Remove		
T5	An co	300mm	12000mm	7000mm	Almost Dead	Remove	Permission required

When the command is selected, the following dialog box is displayed.



Heading

Text typed in this box will be displayed at the top of the Schedule as a heading. If you do not want a heading leave this box blank

Table Size

This box controls the height, in mm, of each row in the Schedule. It should be adjusted to suit the scale of the drawing you are creating.

A simple “rule of thumb” to determine a suitable size for the table is as follows:

1. Decide how high you want the Legend text to be when printed, eg, 4mm
2. Add 2mm, to allow a 1mm space above and below the text, → 6mm
3. Multiply that number by the Plot Scale, eg, a Plot Scale of 200 gives 1200
4. Use this final number as the “Table Size”

Show Diameter

If this box is ticked the **trunk diameter** of the plants, as entered in the Label Existing Plant command, will be included in the Schedule.

Show Height

If this box is ticked the **height** of the plants, as entered in the Label Existing Plant command, will be included in the Schedule.

Show Spread

If this box is ticked the **spread** of the plants, as entered in the Label Existing Plant command, will be included in the Schedule.

Show Status

If this box is ticked the **Status 1, Status 2** and **Comments** text, as entered in the Label Existing Plant command, will be included in the Schedule.

Show Borders

If this box is ticked, border lines will be generated for the Legend.

With Border Lines

Existing Vegetation

No	Species	Trunk Diam	Height
S1	Ac bu	100mm	3000mm
S2	Ba er	75mm	4000mm
T3	Eu ma	300mm	10000mm
T4	Sc ac	200mm	7000mm
T5	An co	300mm	12000mm

Without Border Lines

Existing Vegetation

No	Species	Trunk Diam	Height
S1	Ac bu	100mm	3000mm
S2	Ba er	75mm	4000mm
T3	Eu ma	300mm	10000mm
T4	Sc ac	200mm	7000mm
T5	An co	300mm	12000mm

Inserting the Schedule

When the **OK** button is clicked, you are prompted to “Locate the position of the tree schedule”. This is the **top, left** corner of the Schedule. A single click will generate the Schedule.

A sample Schedule is shown below.

Existing Vegetation							
No	Species	Trunk Diam	Height	Spread	Status		
S1	Ac bu	100mm	3000mm	3000mm	Retain		
S2	Ba er	75mm	4000mm	3000mm	Retain		
T3	Eu ma	300mm	10000mm	6000mm	Retain		
T4	Sc ac	200mm	7000mm	3000mm	Remove		
T5	An co	300mm	12000mm	7000mm	Almost Dead	Remove	Permission required

***Note**: The Schedule does not automatically update if you add or delete plant labels after inserting it. To update the Schedule simply run this command again (it will remember how you set it up last time) and click the top, left corner of it.*

You can, of course, click somewhere else if you want to re-position the Schedule.

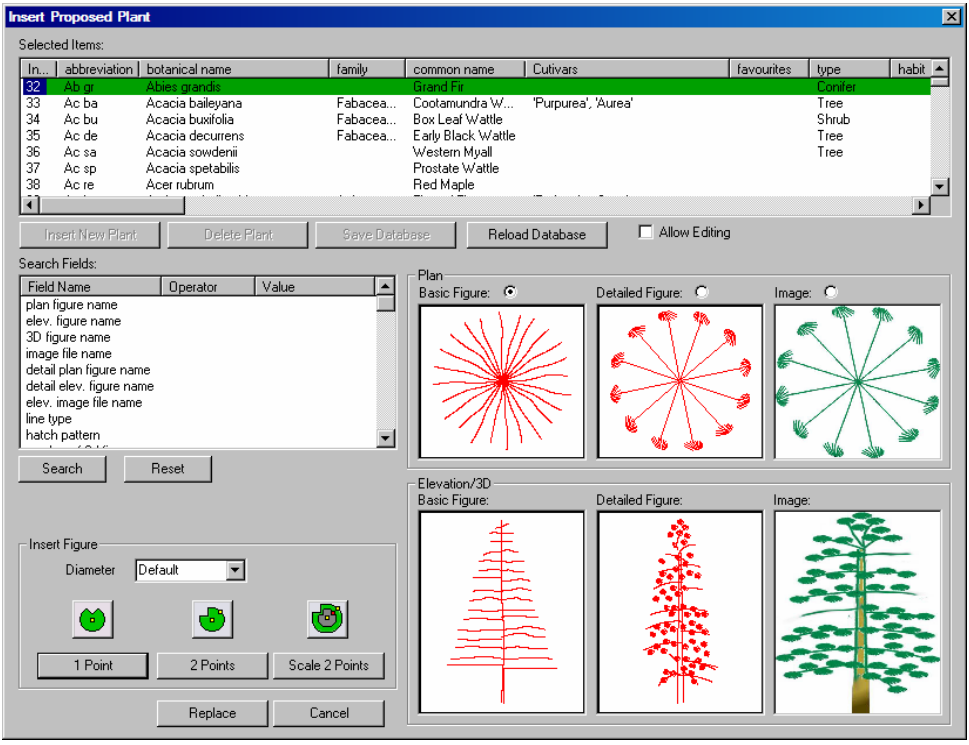
You do not need to delete the existing Schedule before updating it.

Insert Proposed Plant

PURPOSE: To select and insert a figure to represent the plant(s) you are proposing for a landscape plan.

The appropriate type of plant can be searched for and already inserted plants can be replaced.

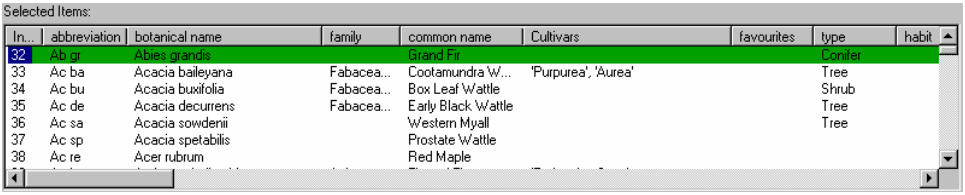
When the command is selected, the following dialog box is displayed.



This command also lets you edit your LANDWorksCAD Excel plant database from within LANDWorksCAD. This is explained at the end of this section. For details on editing your plant database directly in Microsoft Excel, refer to Appendix 2 – Editing the Plant Database in Excel on page 141.

Selecting a Proposed Plant

The "**Selected Items**" area at the top of the dialog box lists the plants defined in the "**Plants**" tab of your LANDWorksCAD Excel plant database. This database is called ***LandworksPlantDatabase.xls*** and is found in the LANDWorksCAD folder on your computer. Refer to Appendix 1 – The LANDWorksCAD Plant Database on page 129 for more details on the database.


Selected Items:

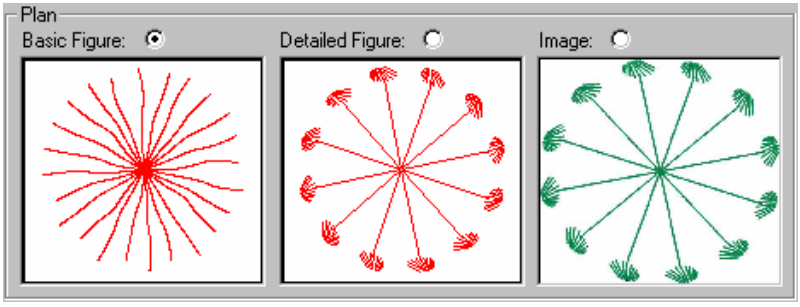
In...	abbreviation	botanical name	family	common name	Cultivars	favourites	type	habit
32	Ab gr	Abies grandis		Grand Fir			Conifer	
33	Ac ba	Acacia baileyana	Fabacea...	Cootamundra W...	'Purpurea', 'Aurea'		Tree	
34	Ac bu	Acacia buxifolia	Fabacea...	Box Leaf Wattle			Shrub	
35	Ac de	Acacia decurrens	Fabacea...	Early Black Wattle			Tree	
36	Ac sa	Acacia sowdenii		Western Myall			Tree	
37	Ac sp	Acacia spetabilis		Prostate Wattle				
38	Ac re	Acer rubrum		Red Maple				

Note: *The buttons just below the selected items area, ie, "Insert New Plant", "Delete Plant", etc, let you edit your plant database from within LANDWorksCAD and are explained later in the section entitled Editing Proposed Plants from within LANDWorksCAD on page 64.*

Scrolling down will show more plants; scrolling sideways will show more data for the plants.

Click once anywhere in the row of data for the plant you want. Preview images of the plant will be displayed in the six, bottom, right hand boxes. Not all of the boxes will necessarily display previews; it depends on what has been defined in your LANDWorksCAD Excel plant database.

The top row of previews shows three ways the plan view of the plant can be displayed in the drawing. You can switch between these displays whenever you want to after the plant has been inserted – refer to the Plant Display Switching command on page 81.



The "**Basic Figure**" and "**Detailed Figure**" previews are of LANDWorksCAD drawing files, ie, they must have been drawn in LANDWorksCAD or created in another CAD program and then imported and saved in LANDWorksCAD.

The "**Image**" preview is of a JPG or BMP (bitmap) format file. This could be an actual photograph of the plant or it could be an artistic representation that has been created outside of LANDWorksCAD using image editing software, eg, PhotoImpact. The JPG format is preferred because file sizes are much smaller.

Having three ways of displaying the plan view of the plant gives you maximum flexibility in how you present your landscape drawings, eg, for concept plans, construction plans, presentation plans, etc, and, as stated earlier, you can switch between them whenever you want to.

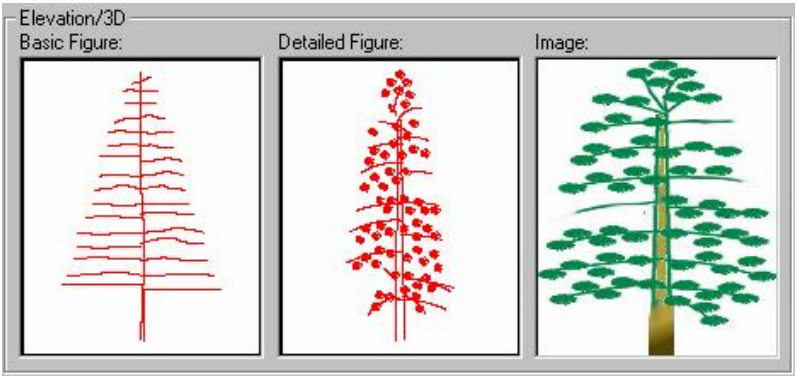
It is up to you to decide just how "basic" the basic display is or how "detailed" the detailed display is. Either can be as simple or as complex as you wish.

Likewise it is up to you to decide if the image display is an actual photograph or a computer generated image.

All three plan displays do not have to be created for every plant, though obviously you must use at least one or nothing will be displayed on the screen.

The plan display to be inserted can be selected by clicking in the white dot above the preview so that a smaller black dot appears within it.

The information explained above also pertains to the Elevation/3D previews; the Basic and Detailed figures are LANDWorksCAD drawing files and the Image is a JPG or BMP file.

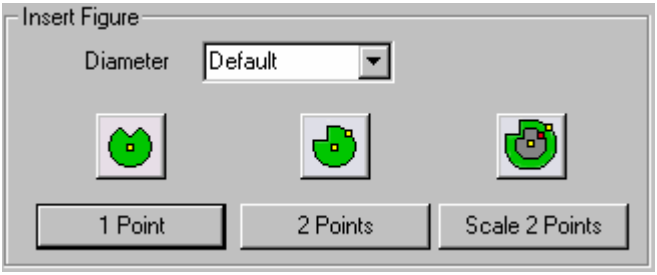


Note: *The Elevation/3D figures cannot be inserted using this command. They can be generated automatically via the Insert 3D Plants command (page 114) or inserted manually (refer to "Figure and Group commands" in the RealCAD-V5 Reference Manual for more information on manually inserting figures).*

Inserting the Selected Proposed Plant

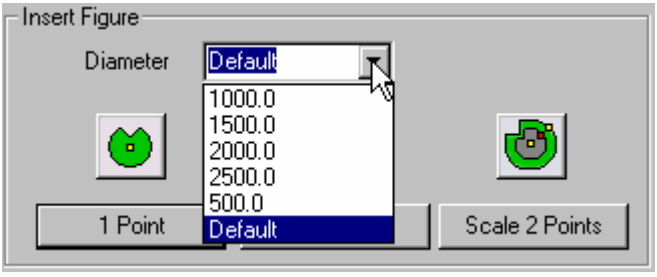
Inserting the selected proposed plant is a two step process:

1. Select the diameter of the plant,
2. Insert the plant using the appropriate insertion method



Select the Diameter of the Plant

The diameter of the plant can be selected from the “Diameter” box, as shown below:



If the required diameter is not listed it can simply be typed directly into the box.

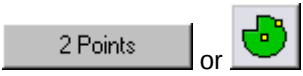
The word “Default” means the plant will be inserted at the size it was originally drawn.

Insert the Plant Using the Appropriate Insertion Method

Once the diameter has been selected, the plant can be inserted into your drawing in three different ways: “1 Point”, “2 Points” or “Scale 2 Points”. These methods are explained below.

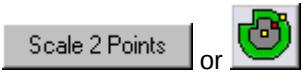
Clicking either of these buttons attaches an image of the plan view of the plant to your crosshair and the plant is inserted where you click your left mouse button.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*



Clicking either of these buttons attaches an image of the plan figure of the plant to your crosshair, but two mouse clicks are required to insert it. The first mouse click positions the plant figure; the second click defines the orientation of the plant, ie, you can spin it around.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*

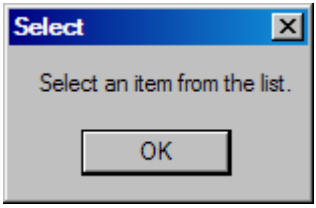


Clicking either of these buttons attaches an image of the plan figure of the plant to your crosshair, but two mouse clicks are required to insert it. The first mouse click positions the plant figure; the second click defines the orientation and size, or scale, of the plant, ie, you can spin it around and you can also make it larger or smaller than the original image.

***Note**: If inserting the image, a rectangle will be displayed on the crosshair; the image won’t actually appear until you click.*

This technique ignores the Diameter box.

***Note**: If a plant has not been selected before any of these buttons are clicked, the following dialog box will be displayed, indicating that a plant must be selected from the "Selected Items" list.*



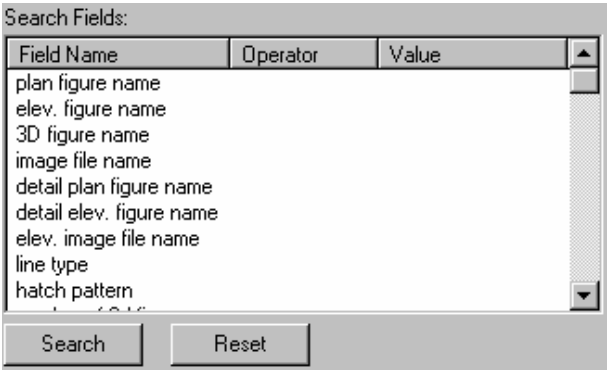
***Tip**: If you want to insert more copies of a plant that you have already inserted you don't have to use this command again, you can simply copy the plants. They will still be recognised as plants from your database. You can use any of the standard ways of copying techniques:*

- *The Translate (Copy) Entities command*
- *The Copy Along command*
- *The Copy Array command*
- *The **Edit → Copy** and **Edit → Paste** technique*
- *The **CTRL+C** and **CTRL+V** technique*
- *The "**drag the entity while holding down the CTRL key**" technique*

*Refer to the "**RealCAD** V5.x **Reference and User Manual**" for details on commands and techniques.*

Searching for Proposed Plants

You can search for the plant you want using the **Search Fields** part of the command. You can search on any of the data in the "Plants" sheet of your LANDWorksCAD Excel plant database.

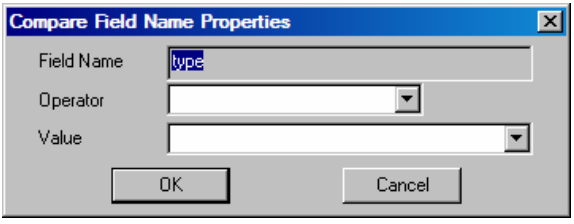


The *Field Name* column lists every column from your database; the *Operator* column controls the range of data you are searching for and the *Value* column provides limits for the search.

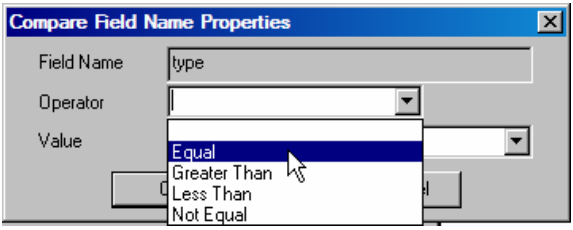
The database can be search in two ways, although they are similar.

Method 1

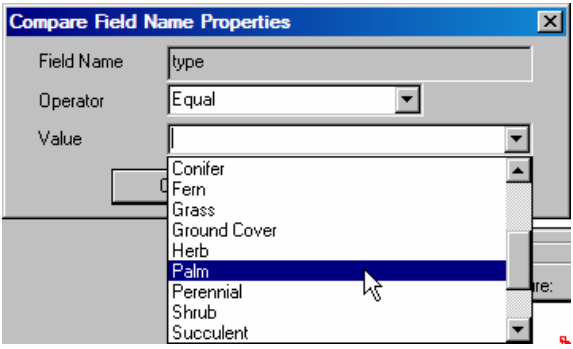
Double-click on the desired Field Name. This activates the "*Compare Field Name Properties*" dialog box as shown below. Here the "*Type*" field was selected.



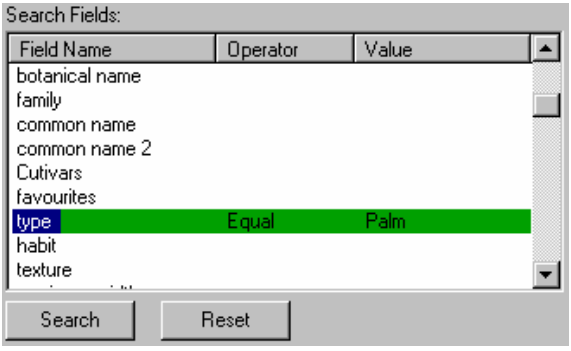
Select the type of search "*Operator*" from the drop-down list, as shown below. Here "*Equal*" is selected.



Select the desired search "*Value*" from the drop-down list as shown below. Here "*Palm*" is selected. The values in the drop-down list will vary depending on the Field Name selected. The values are extracted from your database.

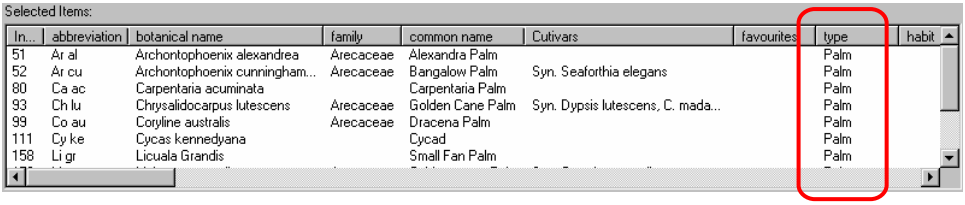


Click *OK* to finish the process. Your Search Fields area will look as shown below.



You may repeat the above steps with other Field Names to create multiple search criteria, eg, you might be searching for all palms that have a maximum width great than 3000mm.

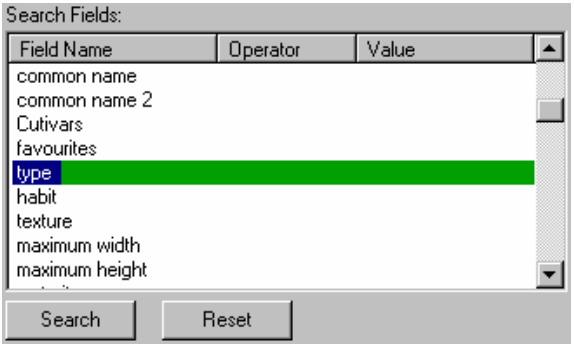
When you're happy with the search criteria, click the "***Search***" button. The Selected Items area will change and display only the items that match the search criteria. For example, the image below shows only Palms.



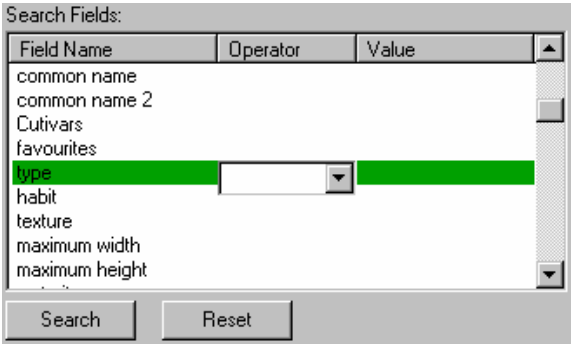
The desired plant can now be selected from the filtered list and inserted as described above.

Method 2

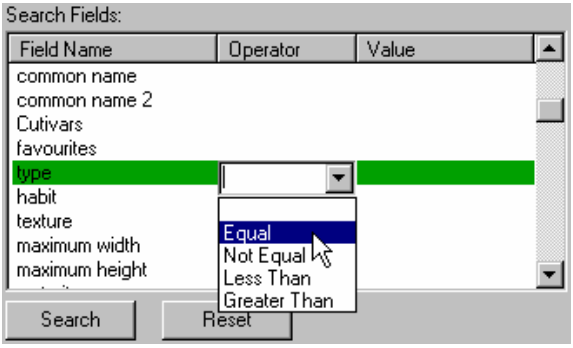
Click once on the desired "*Field Name*". The Field Name will be highlighted as shown below. Here the "*Type*" field was selected.



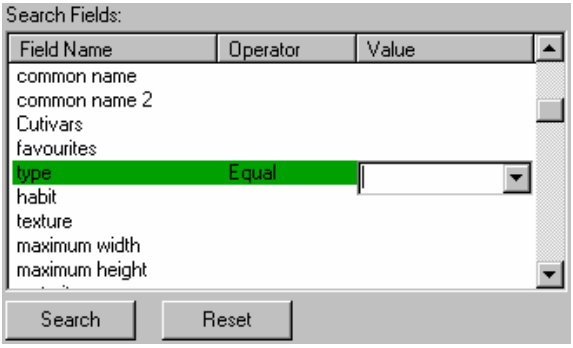
Click in the green highlighting line under the "*Operator*" heading. A drop down field will appear as shown below.



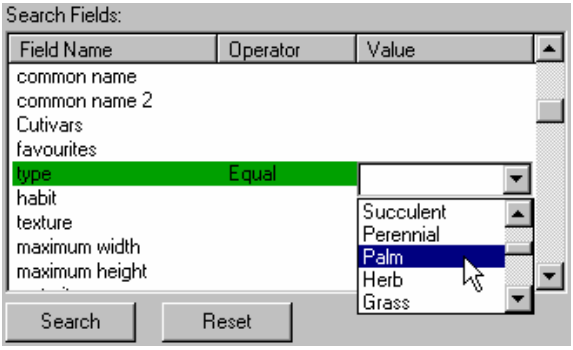
Select the type of search "*Operator*" from the drop-down list, as shown below. Here "*Equal*" is selected.



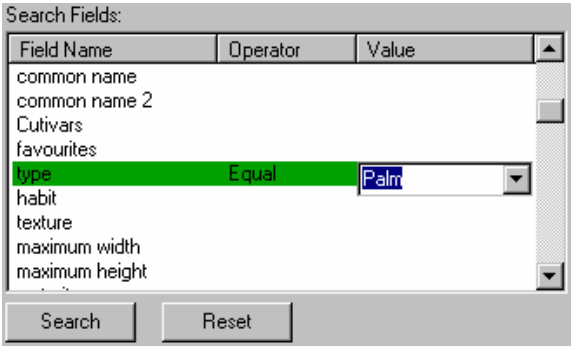
Now click the green highlighting line under the "*Value*" heading. A drop down field will appear as shown below.



Select the desired search "*Value*" from the drop-down list as shown below. Here "*Palm*" is selected. The values in the drop-down list will vary depending on the Field Name selected. The values are extracted from your database.

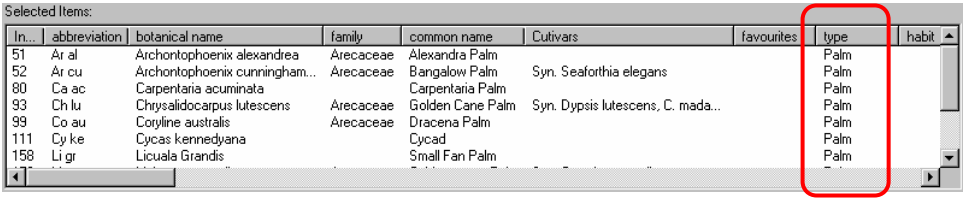


Your Search Fields area will look as shown below.



You may repeat the above steps with other Field Names to create multiple search criteria, eg, you might be searching for all palms that have a maximum width great than 3000mm.

When you're happy with the search criteria, click the "***Search***" button. The Selected Items area will now display only the items matching the search criteria, eg, the image below shows only palms.



The desired plant can now be selected from the filtered list and inserted as described above.

Resetting the Search Criteria

To clear the filtered list of plants and display all the plants in the database again, click the "***Reset***" button and then click the "***Search***" button.

Replacing Already Inserted Proposed Plants

The "**Replace**" button lets you replace plants that have already been inserted into the drawing with other plants from the database.

This can be done in either of two ways:

1. You can select the plants to be replaced and then run the command, or
2. You can run the command first and then select the plants to be replaced

The two methods are nearly identical. The main difference is in how you can select the plants to be replaced.

Select the plants to be replaced and then run the command

Step 1 – Select the plants that have already been inserted into the drawing. You can use any selection technique for this.

Step 2 – Run the "Insert proposed Plant" command (this command).

Step 3 – Select the replacement plant from the "Selected Items" list.

Step 4 – Click the "**Replace**" button.

The selected plants will be replaced.

Run the command first and then select the plants to be replaced

Step 1 – Run the "Insert proposed Plant" command (this command).

Step 2 – Select the replacement plant from the "Selected Items" list.

Step 3 – Click the "**Replace**" button.

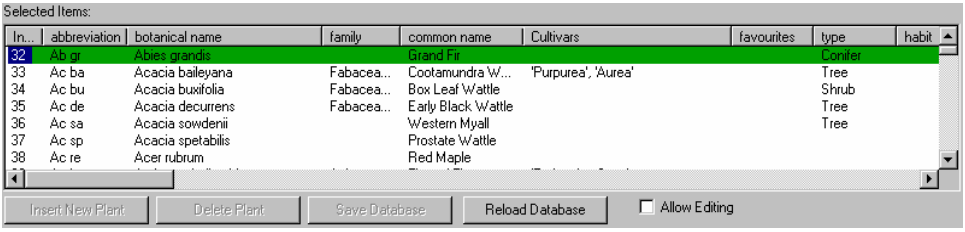
Step 4 – Select the plants that have already been inserted into the drawing. You can only select plants one at a time using this method.

The selected plants will be replaced.

Editing Proposed Plants from within LANDWorksCAD

The buttons and tick box displayed just below the "Selected Items" area let you edit your plant database from within LANDWorksCAD. This means you don't actually have to know anything about Microsoft Excel to be able to edit your database. ☺

However, your plant database can also be edited directly in Microsoft Excel. Refer to Appendix 2 – Editing the Plant Database in Excel on page 141 for details.



When the dialog box is displayed, the buttons giving you access to the plant database – "**Insert New Plant**", "**Delete Plant**" and "**Save Database**" – are "greyed-out", ie, they are not accessible. This is to avoid plant data being accidentally edited. The "**Reload Database**" button is available in case the database has been edited in Excel while LANDWorksCAD is open.

> ***Important Note***
> You can edit the database in Excel while LANDWorksCAD is running, but you cannot and must not edit the database from within LANDWorksCAD while the database is open in Excel.
>
> This is not a limitation of LANDWorksCAD; it is a simply how files work in Windows – you cannot work on the same file, at the same time, with two different programs. If the database is open in Excel when you save it from LANDWorksCAD, you will get an error message and LANDWorksCAD will lock up or crash.

To activate the greyed-out buttons and allow editing of your plant database, click the "**Allow Editing**" box, so that a tick is visible. The buttons will then look like this:

You can also edit plants that are already in the database, although there is no specific button for this.

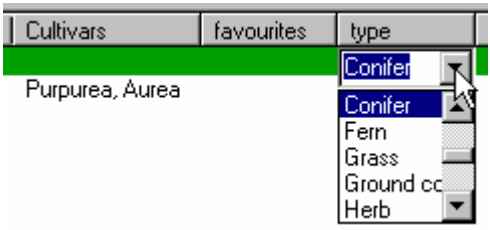
The editing functionality is explained below:

Edit a Proposed Plant already in the Database (no button)

To edit the botanical data of a plant already in the database simply click on the text and edit it. The row of data will be highlighted in green, except for the specific text to be edited, which will remain white for ease of typing.

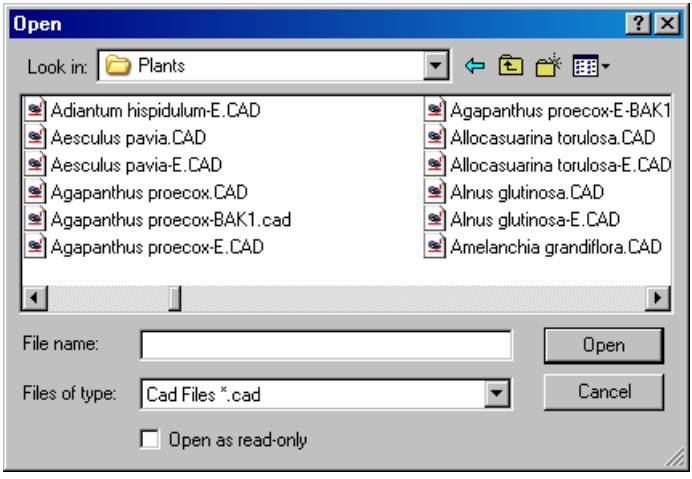
You can also press the Tab key to move to the next column.

Some columns provide a list of data to choose from, indicated by a downward pointing triangle. Clicking on the triangle displays the list, as shown below:



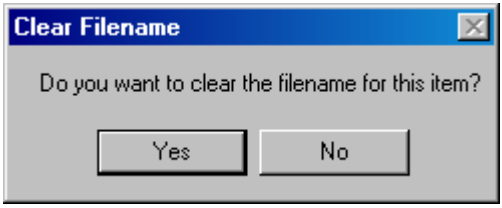
When such a list is available you cannot type in something that is not already in the list; you can only select data from the list. You can, however, edit and add to the list by editing the database in Excel. See Appendix 3 – Working with the Selection Data on page 143 for details on doing this.

To change the figure or image file for the plant, simply click in the relevant preview box and the following dialog box will be displayed allowing you to browse for the appropriate file.



When you have found the file, select it and click the **Open** button. The file will then be displayed in the preview box.

When you select a plant figure or image using this technique, LANDWorksCAD is editing data to columns you can't see, "behind the scenes". This data is the path and filename of the selected figure/image file. If you cancel the dialog box, the following message will appear:



Click the **Yes** button if you want to completely clear the filename data that was entered, if any. Click the **No** button if you want to retain the filename data that was there, if any.

Notes:

1. When browsing for figures, the "**Files of type**" section of the dialog box is limited to "**Cad Files *.cad**" so you will only see LANDWorksCAD type files. Elevation/3D figures have a "**-E**" at the end of their name for ease of identification.
2. When browsing for image files, the "**Files of type**" section of the dialog box is limited to "**Image Files *.bmp, *.jpg**" so you will only see those types of files. Elevation/3D image files have a "**-E**" at the end of their name for ease of identification.
3. Selecting the appropriate plant figure/image file is a simple process, but there is one important prerequisite – the figure or image file must exist before it can be selected, ie, it must have been drawn/created first.

Important Note
When you have finished editing your plants, it is vitally important that you save the changes to the database by clicking the "**Save Database**" button (see below). If you don't, you will lose the changes.

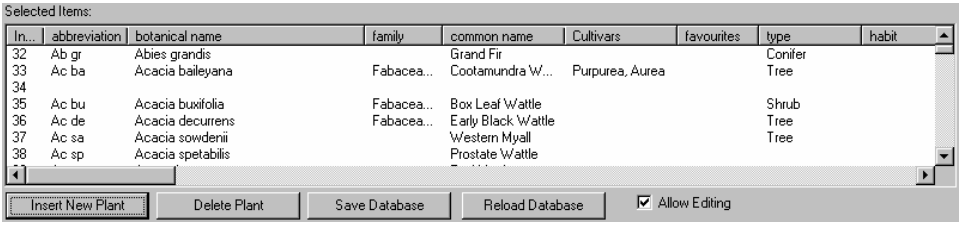
Insert New Plant

There are two stages to inserting a new plant:

1. Entering the botanical data, and
2. Selecting the appropriate figures and image files

Entering the botanical data

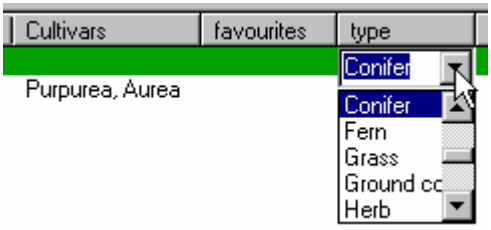
When the "**Insert New Plant**" button is clicked, a blank row is inserted above the plant that is currently selected in the "Selected Items" list. The relevant botanical data for the new plant can then be typed in.



To enter the botanical data, click on the blank row, in the column you want to edit and type in the required data. When you select the blank row it will be highlighted in green, but the part of the row in the column you selected will remain white.

You can also press the Tab key to move to the next column.

Some columns provide a list of data to choose from, indicated by a downward pointing triangle. Clicking on the triangle displays the list, as shown below:



When such a list is available you cannot type in something that is not already in the list; you can only select data from the list. You can, however, edit and add to the list by editing the database in Excel. See Appendix 3 – Working with the Selection Data on page 143 for details on doing this.

Multiple new plants can be inserted by simply clicking the button again and entering the data.

It's up to you to decide how much data you enter. Most columns are not compulsory. Refer to Appendix 1 – The LANDWorksCAD Plant Database on page 129 for details on the database.

Selecting the appropriate figures and image files

Once the botanical data has been entered, appropriate LANDWorksCAD figures and image files must be selected to represent the plant in the drawing.

To select the plant figure or image file, simply click in the relevant preview box and browse and select the appropriate file, as described in the Edit a Proposed Plant already in the Database (no button) section above.

Note that not all the preview boxes have to be filled in, but at least one must be, otherwise there will be nothing to see when the plant is inserted. ☺

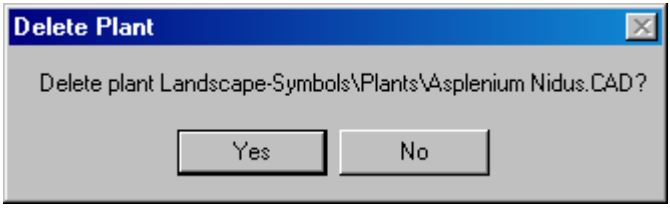
The Elevation/3D figures and images are not required at all if you are only working in 2D.

Important Note

When you have finished inserting your plants, it is vitally important that you save them to the database by clicking the "**Save Database**" button (see below). If you don't, you will lose them.

Delete Plant

To delete a plant, select the plant by clicking anywhere in its row and then click the "**Delete Plant**" button. The following confirmation dialog box will appear (with the appropriate plant name, of course)



Click the **Yes** button to confirm you want to delete the plant from the database. Click the **No** button if you do not want to delete the plant.

Important Note
When you have finished deleting plants, it is vitally important that you save the changes to the database by clicking the "**Save Database**" button (see below). If you don't, the plants will not be permanently deleted.

Save Database

After you have done any editing, inserting or deleting of plants, you should click the "**Save Database**" button so the changes are stored permanently in the database. If you don't, the changes will not be remembered by LANDWorksCAD, ie, plants you thought you added to the database will not be there, plants you thought you deleted will still be there, etc.

Reminder Note
You can edit the database in Excel while LANDWorksCAD is running, but you cannot and must not edit the database from within LANDWorksCAD while the database is open in Excel.

This is not a limitation of LANDWorksCAD; it is a simply how files work in Windows – you cannot work on the same file, at the same time, with two different programs. If the database is open in Excel when you save it from LANDWorksCAD, you will get an error message and LANDWorksCAD will lock up or crash.

Reload Database

Clicking the "**Reload Database**" button forces LANDWorksCAD to re-read the plant database and show any changes that have occurred since LANDWorksCAD started.

This would be necessary if the database was edited in Excel while LANDWorksCAD was running.

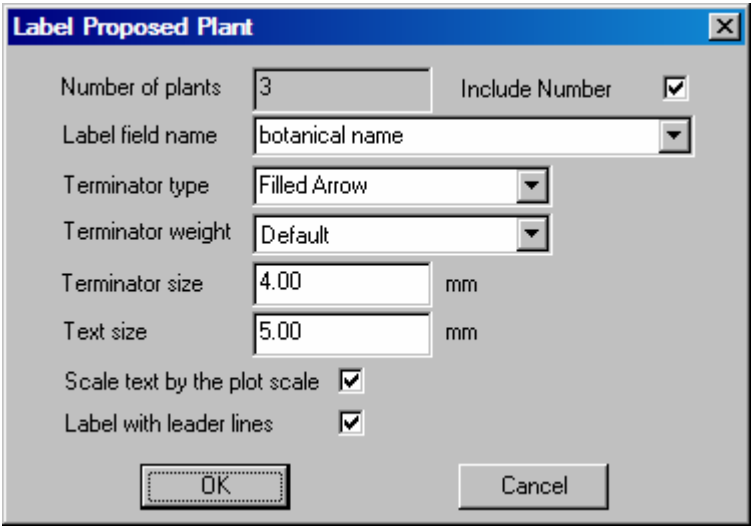
It would also be necessary if you have been editing the plant database from within LANDWorksCAD and have made a few mistakes (it does happen! ☺) and want to start again.

Label Proposed Plant

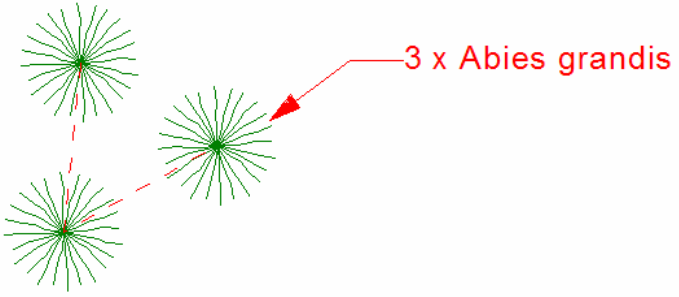
PURPOSE: To label proposed plants inserted from the LANDWorksCAD Excel plant database (using the Insert Proposed Plant command – refer to previous section) for identification on the landscape drawing.

You can select the plant(s) to be labelled before or after running the command. Refer to the Number of plants section on page 71.

When the command is selected, the following dialog box is displayed.



An example of a label is shown below. It shows the botanical name of the plants, how many there are, a leader pointing to one of the plants and a connecting line. Not all these components are compulsory.



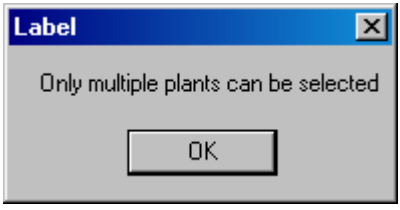
Number of plants

This box displays the number of plants that were selected prior to running the command. If no plants were selected prior to running the command this box displays **1** and you can only label one plant at a time. This box is not editable.

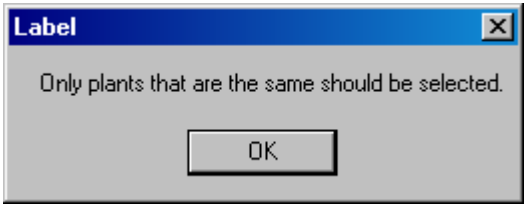
***Note**: If you select multiple plants prior to running the command, make sure that:*

1. *You select only plants, and*
2. *You select the same type of plant*

If you select entities other than plants, eg, lines or circles, the following warning box will be displayed. LANDWorksCAD can only label plants.

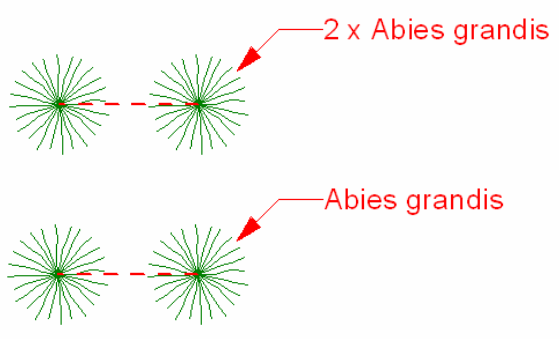


If you select more than one type of plant, eg, an Acacia buxifolia and an Acacia snodenii (which can look similar on the screen, depending on the figures used to represent them) the following message box will be displayed. LANDWorksCAD can only label one botanical name at a time.



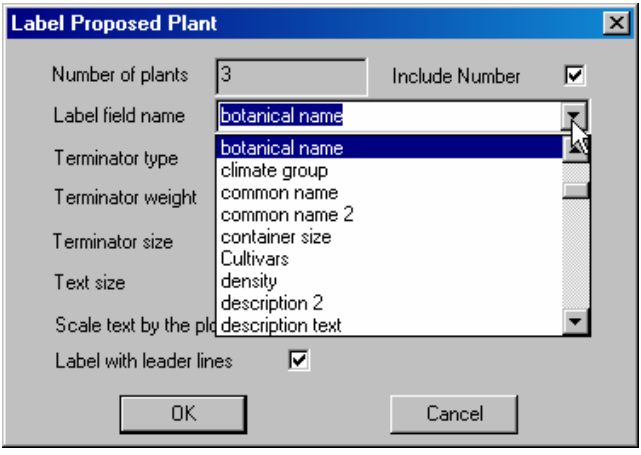
Include Number

If this box is ticked, the number of selected plants will be included in the label. If the box is not ticked, the number will not be displayed. In the examples shown below, two plants were selected for labelling – the top example had the box ticked, while the bottom example did not.



Label Field Name

This box lets you choose what data from the plant database is used to identify the plants. In the examples and dialog box above the botanical name was used, but any field from your plant database can be used, eg, abbreviation or common name. Clicking on the triangle at the end of the box displays a list of the fields from your plant database, as shown below:



Terminator Type

This box lets you choose what type of terminator you want on the end of the leader lines (if you use them). Clicking on the triangle at the end of the box displays a list of the terminator types. There are seven to choose from and they are shown below.

Terminator Type	Display
None	
Arrow	
Open Arrow	
Filled Arrow	
Dot	
Filled Dot	
Slash	

Terminator Weight

Leader lines, if used, are drawn with the current line weight. This box lets you choose an alternate weight, or thickness, of the lines that make up the terminator. Clicking on the triangle at the end of the box displays a list of the available weights; they range from 0 to 3.0mm. There is also a “Default” option, which means the terminator lines are drawn with the same weight as the leader lines. The examples shown below have a current line weight of 0.25mm.

Default **0.50** **1.50**

Terminator Size

This box lets you choose the size of the terminator. This is the length of the arrow or slash, or the diameter of the dot.

Text Size

This box lets you define the size of the label text. Text size is influenced by the next option, Scale Text by the Plot Scale and can work in either of the following two ways

1. If the Scale Text by the Plot Scale option is ticked, then the text size entered is automatically multiplied by the view's Plot Scale and the text is displayed on the screen at that scaled size.

   For example, if a text size of 4mm is entered and the Plot Scale is 100, the text will be displayed on screen at 400mm high.

   This technique lets you define the text size based on the height you want it to be when it is printed on paper. If the Plot Scale is changed for some reason, the on-screen text height will automatically adjust, but, providing you print the drawing at the specified Plot Scale, the text will always print at the height specified.

   For example, a text height of 4mm and a Plot Scale of 100 produces on-screen text at 400mm high. Printing the drawing at a scale of 1:100 will produce text 4mm high on the paper. Change the Plot Scale to 200 and the on-screen text will become 800mm high, but printing the drawing at a scale of 1:200 will still produce text 4mm high on the paper.

2. If the Scale Text by the Plot Scale option is not ticked, then the text size entered is the on-screen height. It is not, in any way, affected by the view's Plot Scale.

   For the text to be visible on the screen, the size must be calculated accordingly.

   This technique will produce printed text of a different size if the Plot Scale is changed.

   For example, if a text height of 400mm is specified and the Plot Scale is 100, the printed text will be 4mm high, but if the Plot Scale is changed to 200, the printed text would be 2mm high.

Scale Text by the Plot Scale

This tick box controls whether the text size entered is automatically multiplied by the view's Plot Scale for on-screen display. Refer to the previous section, Text Size for more details.

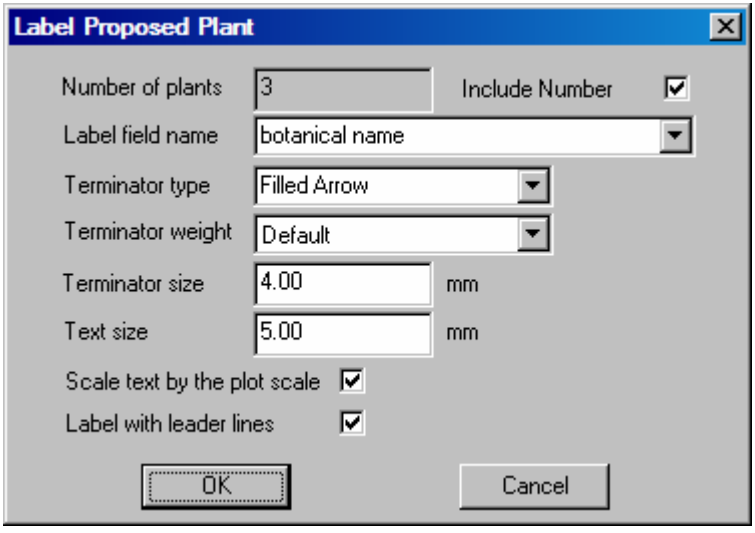
Label with Leader Lines

This tick box controls whether leader lines are displayed for the label. The left hand example below shows a label with leader lines; the right hand example shows a label without leader lines.

Inserting the Label

When the **OK** button is clicked, you can insert the label. The steps required to do this will vary depending on what options were set in the dialog box.

For example, assume the dialog box was filled in as shown below.

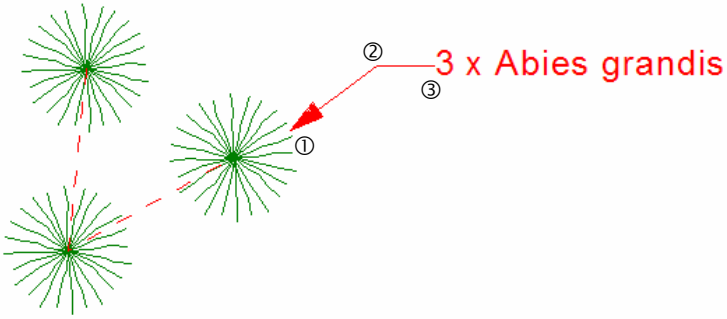


The steps required to insert the label would be as follows:

1. Locate the start of the leader (the tip of the terminator)
2. Locate the corner of the leader
3. Locate the end of the leader

The label text is inserted automatically at the end of the leader line.

An example of the resultant label might be as shown below. The ①②③ labels correspond to the three steps above.



The line joining the selected plants is inserted automatically and joins the origin points of the plants. It is inserted with the active colour, layer style and weight.

If the plants had not been selected prior to running the command, you would be prompted to select a single plant before inserting the label

If the “Label with leader lines” option was not ticked, you would only be prompted for the location of the text.

After the label has been inserted, the command remains active, letting you label more plants using the same settings, although only one plant at a time can be labelled.

Tip: *Holding down the Shift key while selecting the leader points will constrain the leader lines to be either 0° (horizontal), 45° or 90° (vertical).*

Tip: *To create a purely horizontal (or vertical) leader, hold down the Shift key and simply draw the leader in a straight line.*

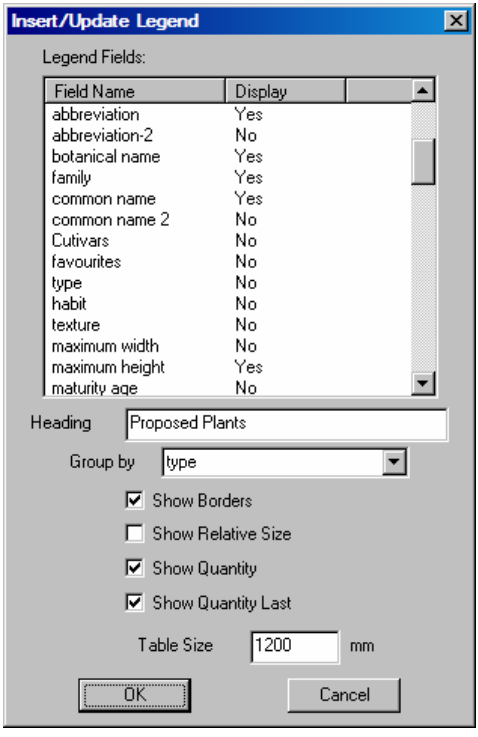
Proposed Plant Legend

PURPOSE: To automatically generate a Legend of all the proposed plants that have been inserted in the drawing.

A sample Legend is shown below.

Proposed Plants				
	abbreviation	botanical name	common name	Qty
Palm				
	Ar al	Archontophoenix alexandrea	Alexandra Palm	6
	Ar cu	Archontophoenix cunninghamiana	Bangalow Palm	4
	Ph ro	Phoenix roebelenii	Dwarf Date Palm	3
Shrub				
	Gr ho	Grevillia hookerana	Red Toothbrushes	4
	Gr le	Grevillia leucopteris	White Plume	10
Tree				
	An co	Angophora costata	Red Gum	3

When the command is selected, the following dialog box is displayed.



Legend Fields

This part of the dialog box lets you select the botanical data that you want displayed in the Legend. Every column that is in the LANDWorksCAD plant database is listed here.

Double-click on a field name to toggle its display status between Yes and No. All field names marked 'Yes' will be included in the Legend.

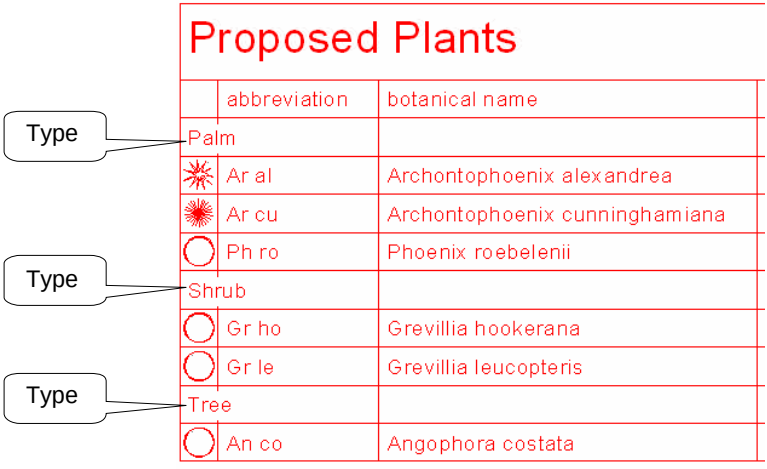
Heading

Text typed in this box will be displayed at the top of the Legend as a heading. If you do not want a heading leave this box blank.

Group By

The plants in the Legend can be grouped by any of the field names. For example, if the plants were grouped by **Type**, all the *shrubs* would be listed together under a sub-heading of "*Shrub*"; all the *trees* would be listed together under a sub-heading of "*Tree*", etc. Any field name can be used to group the plants.

The example below shows the plants grouped by Type.



Show Borders

If this box is ticked, border lines will be generated for the Legend.

With Border Lines

Proposed Plants

	abbreviation	botanical name	common name	Qty
Palm				
	Ar al	Archontophoenix alexandrea	Alexandra Palm	6
	Ar cu	Archontophoenix cunninghamiana	Bangalow Palm	4
	Ph ro	Phoenix roebelenii	Dwarf Date Palm	3
Shrub				
	Gr ho	Grevillia hookerana	Red Toothbrushes	4
	Gr le	Grevillia leucopteris	White Plume	10
Tree				
	An co	Angophora costata	Red Gum	3

Without Border Lines

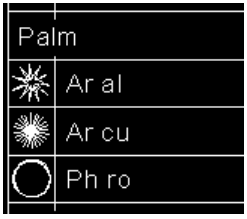
Proposed Plants

abbreviation	botanical name	common name	Qty
Palm			
Ar al	Archontophoenix alexandrea	Alexandra Palm	6
Ar cu	Archontophoenix cunninghamiana	Bangalow Palm	4
Ph ro	Phoenix roebelenii	Dwarf Date Palm	3
Shrub			
Gr ho	Grevillia hookerana	Red Toothbrushes	4
Gr le	Grevillia leucopteris	White Plume	10
Tree			
An co	Angophora costata	Red Gum	3

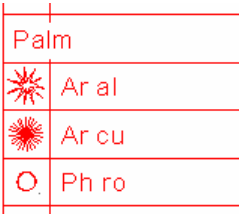
Show Relative Size

The Legend displays a plan figure for each plant and, by default, automatically scales the figures to fit into the given row height so they are all the same size. If this box is ticked, however, the figures are scaled in size relative to each other.

Not Ticked



Ticked



Note the difference in size of the “Ph ro”.

Tip – *If you insert a Legend with this option ticked and some of the plan figures don’t appear, it is most likely because those plants are much smaller on the drawing than the other plants and so are tiny when inserted into the Legend. They are there; they’re just so small you can see them!* ☺

Show Quantity

If this box is ticked, the second column in the Legend will show the quantity of each plant, ie, LANDWorksCAD will count your plants for you!

Show Quantity Last

If this box is ticked, the quantity figures will be in the last column of the Legend, not the second.

Table Size

This box controls the height, in mm, of each row in the Legend. It should be adjusted to suit the scale of the drawing you are creating.

A simple “rule of thumb” to determine a suitable size for the table is as follows:

1. Decide how high you want the Legend text to be when printed, eg, 4mm
2. Add 2mm, to allow a 1mm space above and below the text, → 6mm
3. Multiply that number by the Plot Scale, eg, a Plot Scale of 200 gives 1200
4. Use this final number as the “Table Size”

Inserting the Legend

When the **OK** button is clicked, you are prompted to “Locate the position of the legend”. This is the **top, left** corner of the Legend. A single click will generate the Legend.

A sample Legend is shown below.

Proposed Plants

	abbreviation	botanical name	common name	Qty
Palm				
	Ar al	Archontophoenix alexandrea	Alexandra Palm	6
	Ar cu	Archontophoenix cunninghamiana	Bangalow Palm	4
	Ph ro	Phoenix roebelenii	Dwarf Date Palm	3
Shrub				
	Gr ho	Grevillia hookerana	Red Toothbrushes	4
	Gr le	Grevillia leucopteris	White Plume	10
Tree				
	An co	Angophora costata	Red Gum	3

***Note**: The Legend does not automatically update if you add or delete plants after inserting it. To update the Legend simply run this command again (it will remember how you set it up last time) and snap to the top, left corner of it.*

You can, of course, click somewhere else if you want to re-position the Legend.

You do not need to delete the existing Legend before updating it.

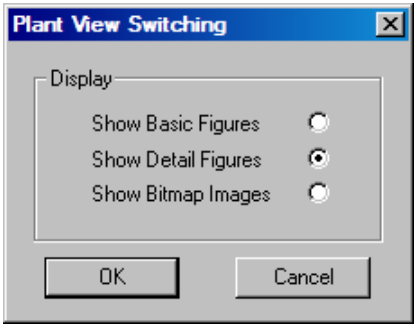
***Note**: The Legend is made up of lines and text and can be edited after it has been inserted. Be aware, though, that any edits will be lost if you insert a new Legend.*

Plant Display Switching

PURPOSE: To display the plants as basic or detailed figures or bitmap images, regardless of how they were initially inserted.

All plants in the drawing can be changed automatically or selected plants only can be changed.

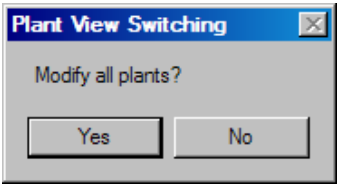
When the command is selected, the following dialog box is displayed.



Select the required display type by clicking in the appropriate white dot.

When the OK button is clicked:

- if plants were selected prior to the command being run, then only those plants are changed,
- if no plants were selected prior to running the command, the following confirmation dialog box is displayed:



If the **Yes** button is clicked, all the plants in the drawing are changed.

If the **No** button is clicked, the command is cancelled.

***Note**: If a drawing contains many plants, changing their display to bitmap images can take a while and subsequent repaints may be slow. It is suggested that plants be displayed as bitmap images only when necessary, eg, for printing or when presenting to clients.*

Tally

PURPOSE: To extract data from the drawing for estimating and quoting. The extracted data is:

- the number of plants
- the lengths of linear entities (lines, arcs, circle and curves)
- areas of planes
- Sub-totals and totals for the above

When the command is selected, the data is written to a temporary file called "quantities.txt", which is immediately displayed in Notepad.

***Note**: Quantities.txt is a temporary file. The same name is used every time the command is run and therefore previous data is overwritten. If you want to save the data in quantities.txt you must select **File → Save As** and save the file to another location for later use.*

Once saved, being a standard "txt" file, it can be opened in any text editor or even Microsoft Excel or Word.

***Tip**: Only entities on "named" layers are counted and measured. Entities on layers that have not been named are ignored. Refer to the RealCAD-V5 Reference Manual for information on named layers.*

***Tip**: Only entities that are currently visible on screen at the time of running the command are counted and measured. This lets you be selective about what information is extracted, eg, if only hardscape related layers are turned on, only hardscape data will be extracted.*

The data below is an example of the sort of data that is extracted by the Tally command.

For ease of reading, the data has been colour coded, as follows:

- Red text is the layer name.
- Black text shows the length of linear entities.
- Blue text shows the areas of planes.
- Green text shows the plants and their quantities.

This colour coding does not occur in the quantities.txt file; all text is black.

Some notes have been added to suggest possible sources of the data.

Decking

2 x 4.000m

1 x 16.000m2

Total length for Decking 8.000m
Total area for Decking 16.000m2

Gardens

1 x 28.447m

Acacia sowdenii (Western Myall) 5
Acer rubrum (Red Maple) 5
Anigozanthos manglesii (Mangles Kangaroo Paw) 6
Asplenium nidus (Birds Nest Fern) 4

Total length for Gardens 28.447m
Total plants for Gardens 20

Mulch

1 x 153.201m2

Total area for Mulch 153.201m2

Paving

2 x 6.000m
2 x 1.500m

1 x 9.000m2

Total length for Paving 15.000m
Total area for Paving 9.000m2

Total length 51.447m
Total area 178.201m
Total plants 20

Two lengths of deck edging perhaps

Area of decking

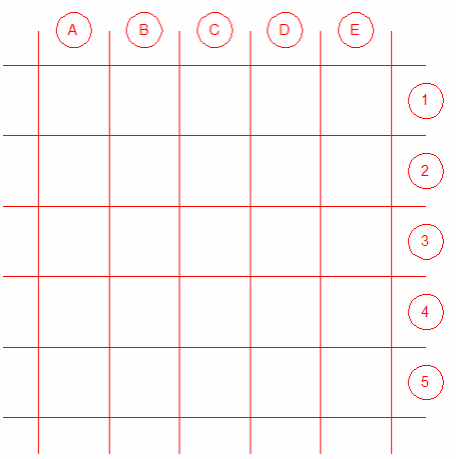
Length of garden edging

Multiply by the depth and you've got the volume of mulch required

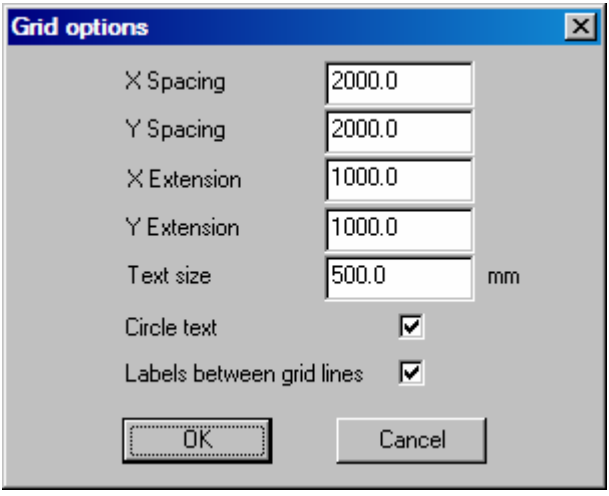
Insert Grid Lines

PURPOSE: To draw a construction grid on the drawing, with row and column labels.

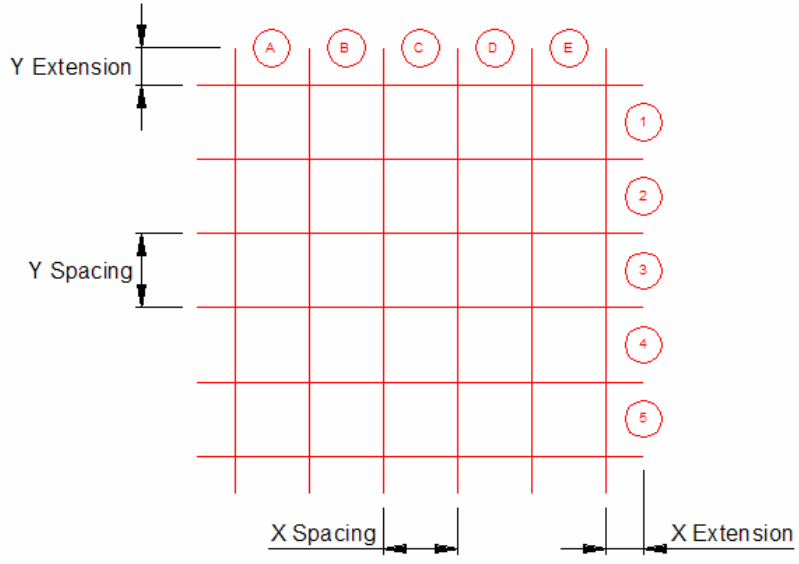
A sample grid is shown below.



When the command is selected, the following dialog box is displayed.



The image and text below explain the options in this dialog box.



X Spacing

This box lets you define the horizontal distance, in mm, between the vertical lines of the grid.

Y Spacing

This box lets you define the vertical distance, in mm, between the horizontal lines of the grid.

X Extension

This box lets you define how far the horizontal grid lines extend past the first and last vertical grid lines.

Y Extension

This box lets you define how far the vertical grid lines extend past the first and last horizontal grid lines.

Text Size

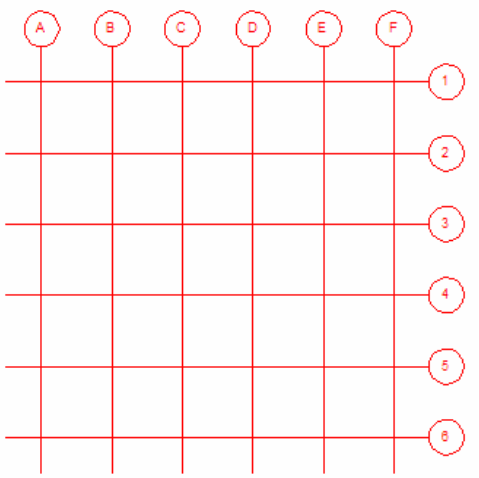
This box controls the height, in mm, of text used as the row and column labels. It should be adjusted to suit the spacing of the grid lines.

Circle Text

If this option is ticked the text used as row and column labels have a circle drawn around them, as shown in the example above.

Labels between grid lines

If this option is ticked the row and column labels are positioned between the grid lines as shown in the example above. If it is not ticked the labels are placed at the end of the grid lines, as shown below.



Inserting the Grid

When the OK button is clicked you are prompted to locate the **lower left corner** and **upper right corner** of the grid. As you drag your crosshair across the screen the grid is dynamically displayed so you know how it is going to look.

The grid is drawn immediately the upper right corner is selected.

The grid lines and circles are drawn using the current colour, layer, style and weight settings. The text is drawn with the current text settings. It is highly recommended that the grid be put on a separate layer so it can be turned of if necessary.

When inserted, the grid is “grouped”, ie, selecting any part of the grid automatically selects the entire grid. This makes it easy to work with the grid as if it was a single item. You can “ungroup” the grid if you need to edit it. Refer to the RealCAD-V5 Reference Manual for more information on grouping.

***Note**: This grid is <u>not</u> the same as the standard RealCAD grid.*

Set Heights

PURPOSE: To assign height values to entities in your drawing, in preparation for generating a 3D Digital Terrain Model (DTM) using the Insert DTM command (see page 92).

For an entity to be used when generating a DTM it must have some sort of height. This height can be an actual physical height, ie, a Z coordinate, or it can be an "assigned" height, ie, a value assigned by this command.

***Note**: A height of 0 (zero) is still a valid height.*

The entities having heights assigned to them would typically be representing contours, spot heights, boundaries, landforms, etc.

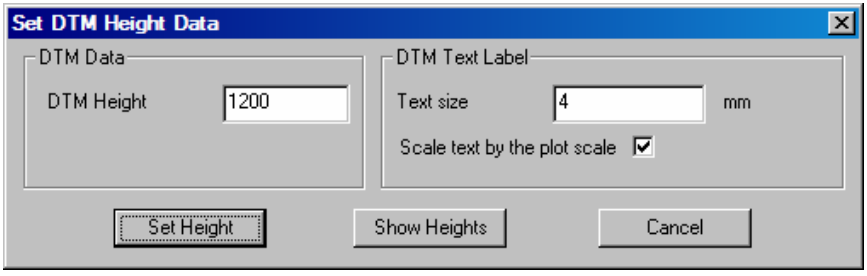
Height values can be assigned to points, lines, arcs, circles and curves.

***Note**: Assigning a height to an entity does not physically move it to that height.*

This command is also used to edit heights that have already been assigned.

If no entities have been selected prior to running the command, you are prompted to select an entity and then the dialog box shown below is displayed.

If an entity or entities have been selected before running the command, the dialog box shown below is displayed immediately.



***Note**: If you want to assign the same height to multiple entities it is more efficient to select them before running the command. Once the command starts you can only assign a height to one entity at a time.*

The text below explains the options in this dialog box.

DTM Height

This box lets you enter the required height value, in mm, that will be assigned to the selected entity or entities.

If the entity or entities have never had heights assigned to them, 0.0 (zero) will be displayed.

If the entity or entities already have a height assigned to them, their height value will be displayed.

***Note**: If you pre-select multiple entities that have different heights assigned to them, the height of the first entity that had a height assigned to it will be displayed.*

Text Size

This box lets you define the size at which the DTM text label will be displayed on the screen when you click the Show Heights button (see below). The text size is influenced by the next option, Scale Text by the Plot Scale and can work in either of the following two ways

1. If the Scale Text by the Plot Scale option is ticked, then the text size entered is automatically multiplied by the view's Plot Scale and the text is displayed on the screen at that scaled size.

   For example, if a text size of 4mm is entered and the Plot Scale is 100, the text will be displayed on screen at 400mm high.

   This technique lets you define the text size based on the height you want it to be when it is printed on paper. If the Plot Scale is changed for some reason, the on-screen text height will automatically adjust, but, providing you print the drawing at the specified Plot Scale, the text will always print at the height specified.

   For example, a text height of 4mm and a Plot Scale of 100 produces on-screen text at 400mm high. Printing the drawing at a scale of 1:100 will produce text 4mm high on the paper. Change the Plot Scale to 200 and the on-screen text will become 800mm high, but printing the drawing at a scale of 1:200 will still produce text 4mm high on the paper.

2. If the Scale Text by the Plot Scale option is not ticked, then the text size entered is the on-screen height. It is not, in any way, affected by the view's Plot Scale.

   For the text to be visible on the screen, the size must be calculated accordingly.

This technique will produce printed text of a different size if the Plot Scale is changed.

For example, if a text height of 400mm is specified and the Plot Scale is 100, the printed text will be 4mm high, but if the Plot Scale is changed to 200, the printed text would be 2mm high.

Scale Text by the Plot Scale

This tick box controls whether the text size entered is automatically multiplied by the view's Plot Scale for on-screen display. Refer to the previous section, Text Size for more details.

Set Height

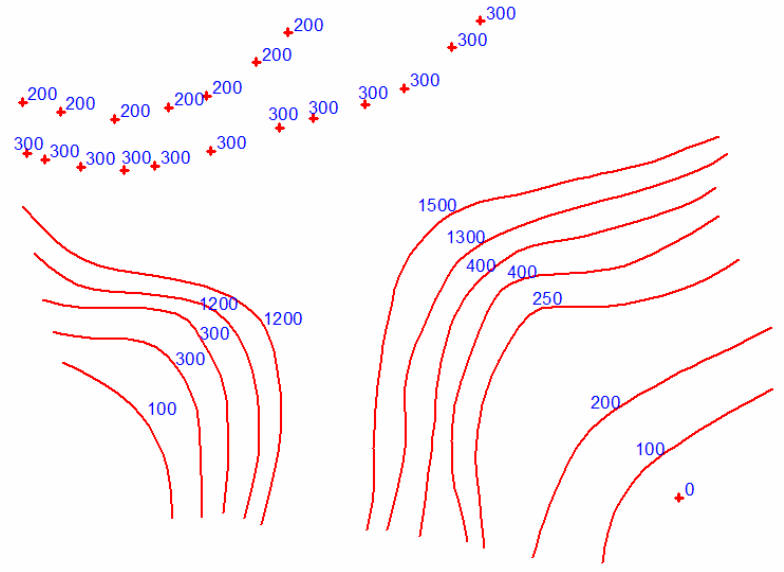
When this button is clicked, the height value entered is assigned to the selected entity or entities. There is no visual indication of this, although the height values can be displayed with the "Show Heights" button (see below).

After a height has been assigned you are prompted to select another entity to assign a height to.

Show Heights

When this button is clicked the height values (DTM text labels) are displayed next to each entity, at the text size specified, as shown below

When the height values are displayed, this button changes to "**Hide Heights**" letting you hide them if you don't need to see them any more.

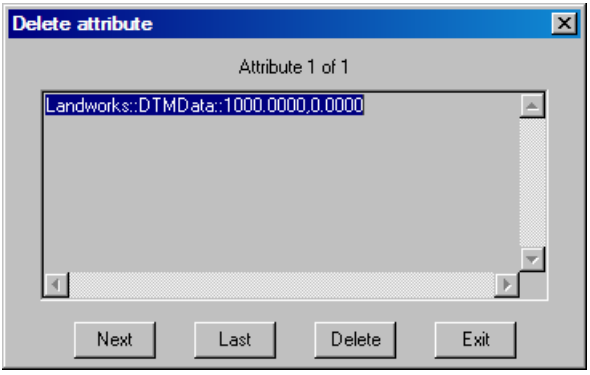


Deleting Assigned Heights

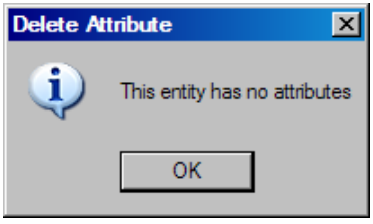
The height values are attached to the entities as attributes. To completely delete the attribute, and hence the assigned height, do the following:

For a single entity

1. Select the entity.
2. Select **Edit → Delete Attribute** from the menu.
3. Its attribute data will be displayed, similar to that shown below.



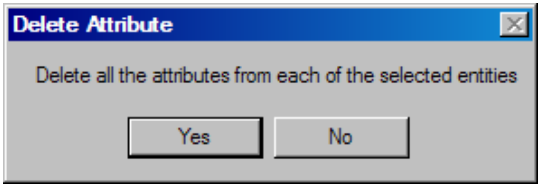
4. Click on the “Delete” button.
5. The following confirmation dialog box will be displayed.



6. Click “OK” to continue.

For multiple entities

1. Select the entities.
2. Select **Edit → Delete Attribute** from the menu.
3. The following confirmation dialog box will be displayed.



4. Click “Yes” to delete all the attributes from each the selected entities. Click “No” if you decide not to proceed.

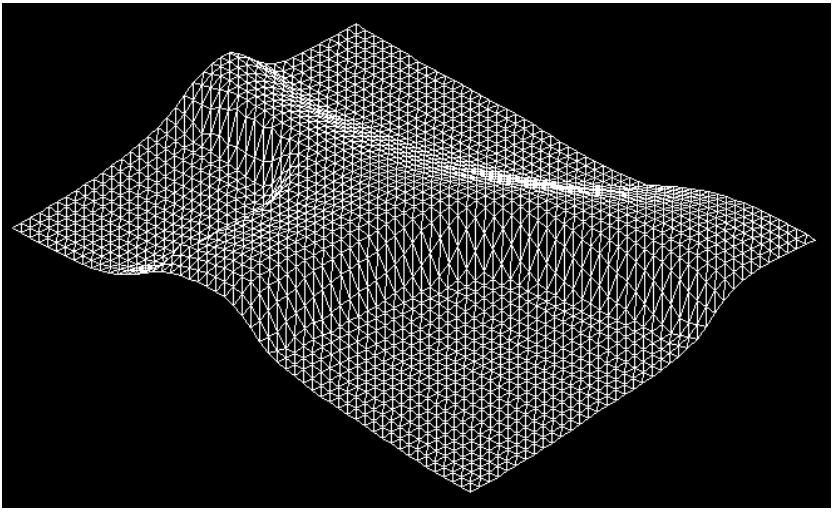
***Note**: If you are an advanced user of LANDWorksCAD and have assigned your own attributes to the entities in your drawing you should not use the “Delete Attribute” command as it will delete **ALL** attributes from **ALL** selected entities.*

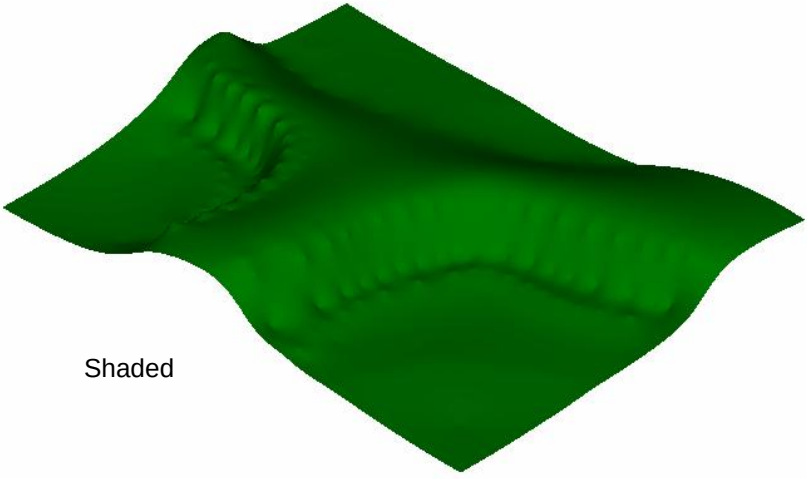
Insert DTM

PURPOSE: To generate a 3D Digital Terrain Model (DTM) based on the actual and assigned heights of the selected entities.

A DTM is basically a rectangular set of triangles draped over the selected entities. Examples are shown below.

***Note**: This command is currently undergoing much development and, while fully functional, may change considerably in both format and function in the near future.*





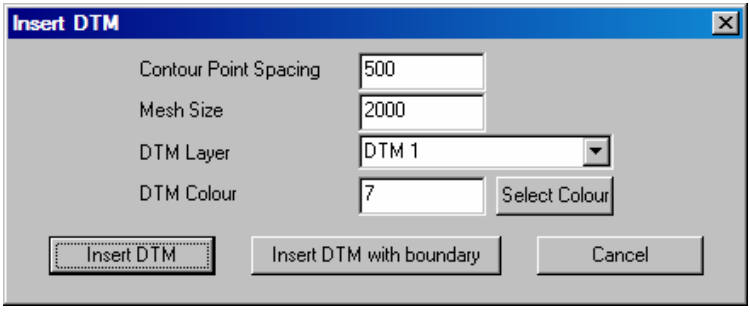
Shaded

If a selected entity has not been assigned a height value using the Set Heights command (see previous section), the 'Insert DTM' process uses the height at which the entity was inserted, ie, its physical Z height. This is typically zero in 2D drawings so it is important that all the selected entities have first had their real life heights assigned.

***Note**: If an entity has an actual, physical height and an assigned height, the assigned height is used by this command.*

The entities to be used in the creation of the DTM must be selected before the command is run.

When the command is selected, the following dialog box is displayed.



The text below explains the options in this dialog box.

Contour Point Spacing

When generating a DTM, each selected linear entity (line, arc, circle and curve) has temporary "contour points" defined along it. This box lets you define the spacing between these contour points.

The spacing is in millimetres.

Smaller spacings generate more contour points and produce a more accurate DTM shape.

However, smaller spacings also increase the amount of time it takes to generate the DTM.

As a rule of thumb, a contour point spacing of **500** is a good value for a DTM of an "average" block of land. If the DTM covers a larger area of land, it could be increased.

***Tip**: If in doubt, use a larger value as it will generate the DTM more quickly and make it easier for you to determine the appropriate value.*

Mesh Size

Mesh Size is the total number of triangles use to generate the DTM. This box lets you define how many triangles you want to use.

A higher number will give a more accurate DTM shape, but the DTM will take longer to generate.

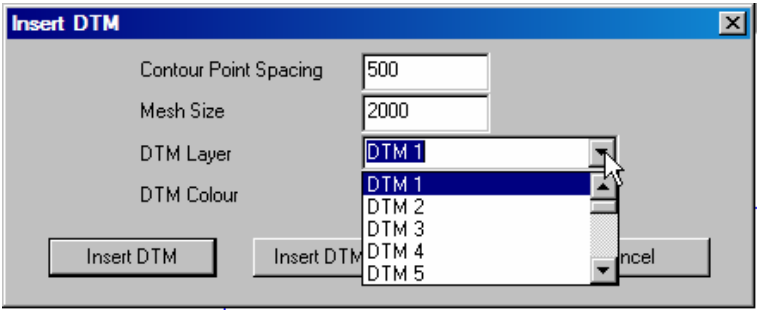
As a rule of thumb, a mesh size of **2000** is a good starting value for a DTM of an "average" block of land. If the DTM covers a larger area of land, it could be increased.

Tip: *If in doubt, use a smaller value as it will generate the DTM more quickly and make it easier for you to determine the appropriate value.*

DTM Layer

This box lets you select the layer on which you want the DTM generated.

The layer can be selected from a list by clicking on the triangle at the end of the box, as shown below.



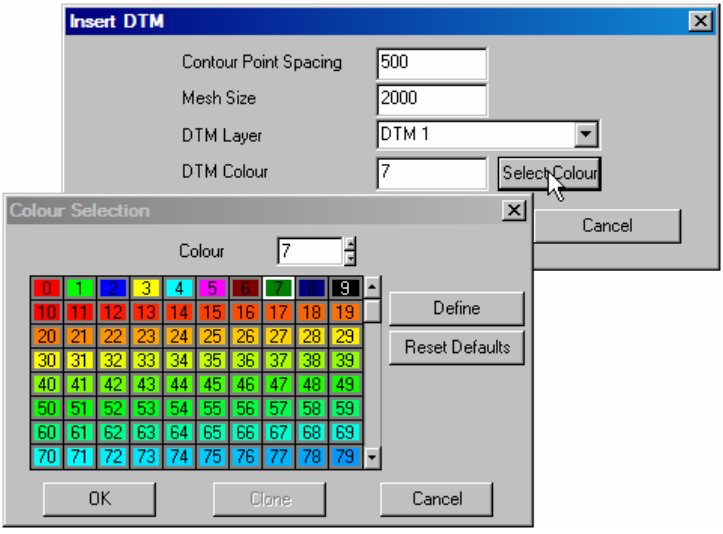
The listed layers are named layers and correspond to the standard LANDWorksCAD numbered layers as follows.

Name	Number	Name	Number
DTM 1	501	DTM 11	511
DTM 2	502	DTM 12	512
DTM 3	503	DTM 13	513
DTM 4	504	DTM 14	514
DTM 5	505	DTM 15	515
DTM 6	506	DTM 16	516
DTM 7	507	DTM 17	517
DTM 8	508	DTM 18	518
DTM 9	509	DTM 19	519
DTM 10	510	DTM 20	520

DTM Colour

This box lets you select the colour with which you want to display the DTM.

The colour number can be typed directly into the box or it can be selected from a palette by clicking on the “Select Colour” button, as shown below.

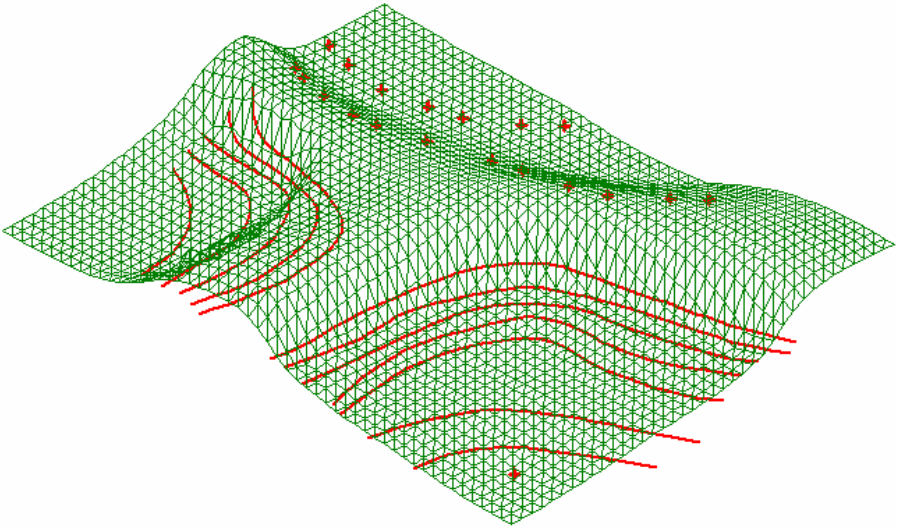


Insert DTM button

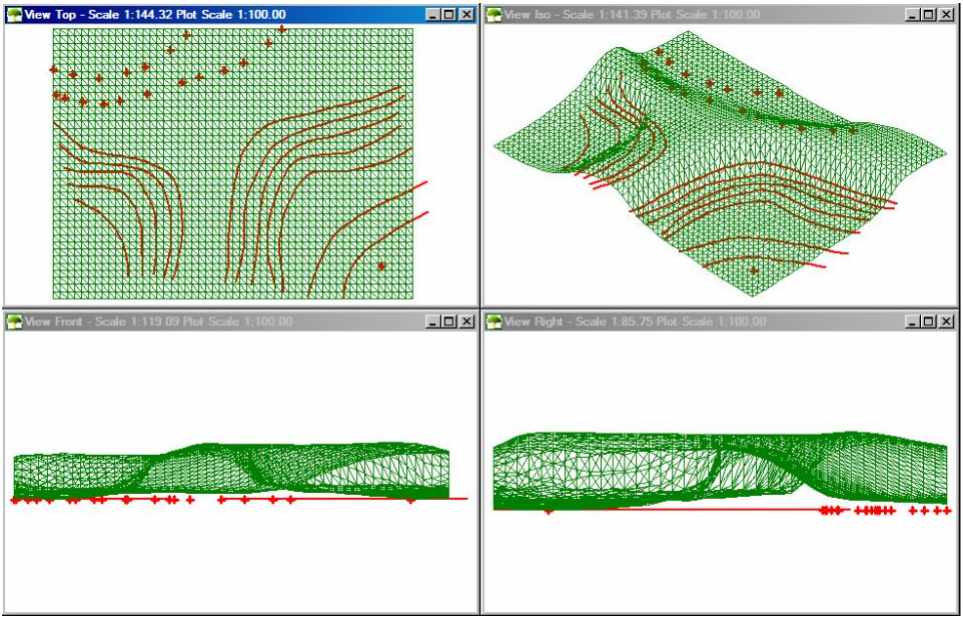
Clicking this button generates the DTM based on the options entered into the dialog box. No further user input is required.

***Note**: If the Contour Point Spacing is small and/or the Mesh Size is large, it may take a few minutes to generate the DTM.*

A sample isometric view of a DTM is shown below. The entities used to generate the DTM can still be seen.



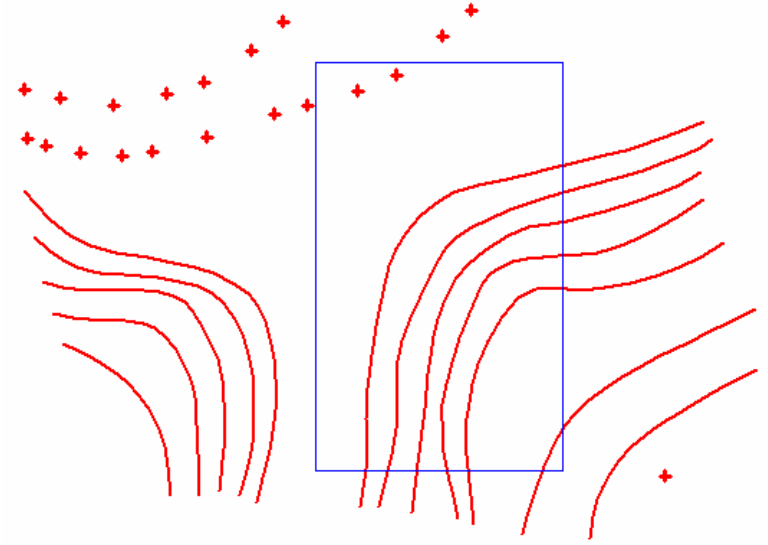
The picture below shows four views of the DTM – Top, Iso, Front and Right.



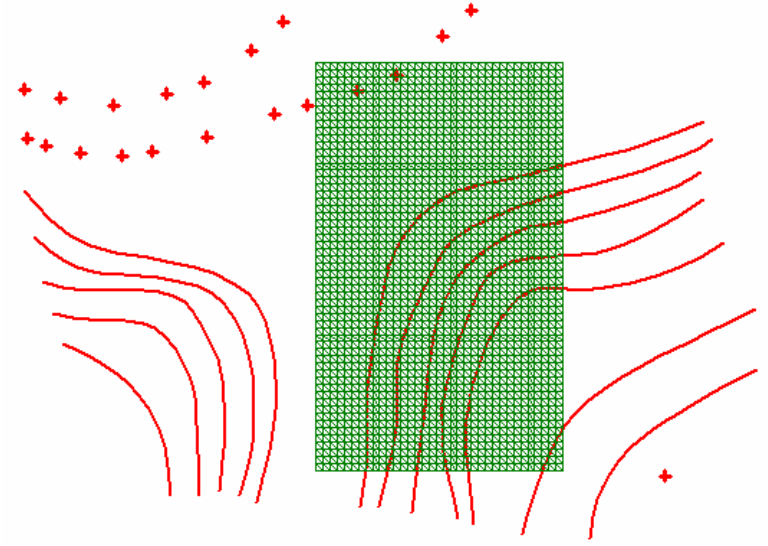
Insert DTM with boundary button

Clicking this button also generates a DTM, but you are prompted for two corners to define a rectangular boundary that limits the size of the DTM.

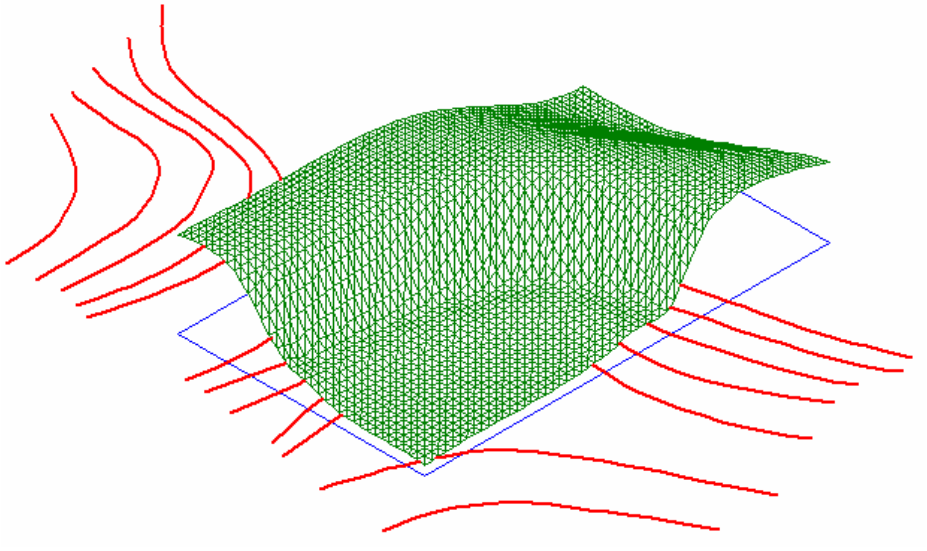
In the image below, a rectangle has been drawn to show the proposed boundary.



Clicking on any two diagonally opposite corner points would generate the DTM shown below.



The isometric view below shows the full effect of the boundary on the DTM. Compare it to the full DTM in the previous section.



Modify DTM

PURPOSE: To allow modification of an existing DTM by a simple push/pull drag method.

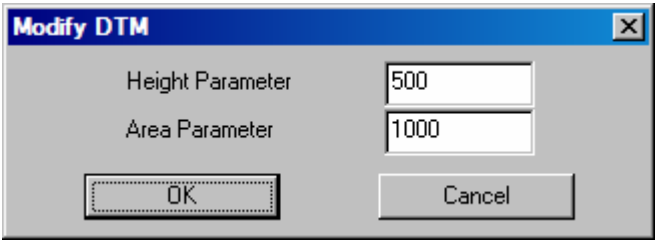
The DTM is modified by effectively dragging a cone shape slowly across it, although the cone shape is not actually visible. The cone can push the DTM down, like digging a hole or trench, or pull the DTM up, like building a mound of dirt.

***Note**: This command has only recently been released and is still undergoing intensive development. As such it is not yet fully functional. It was released with the intent of obtaining feedback from users. It will change in both format and function as it is developed.*

Any comments and/or suggestions about this command are welcome. Please send them to ***Error! Hyperlink reference not valid.****.*

The following notes explain how the command works at the time of writing this manual.

When the command is selected, the following dialog box is displayed.



The text below explains the options in this dialog box.

Height Parameter

This box lets you set the height or depth of the cone. Simply type in the value required.

If the number is positive, the cone pulls the DTM up; if the number is negative, the cone pushes the DTM down.

Area Parameter

This box lets you define the size of the area that is affected by the cone. Simply type in the value required.

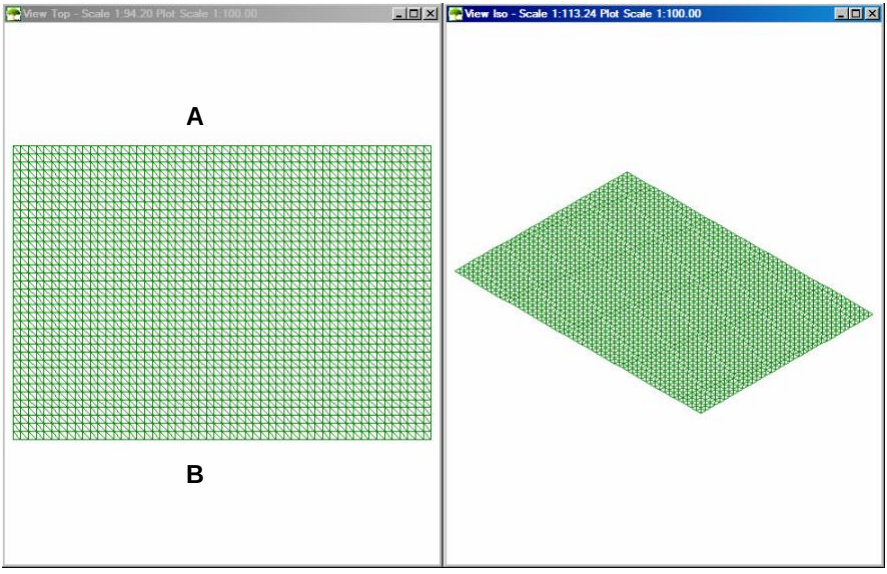
Larger numbers will have a wider effect. It is like the base diameter of the cone.

When you click the **OK** button you are prompted to “Click and drag to modify the surface”.

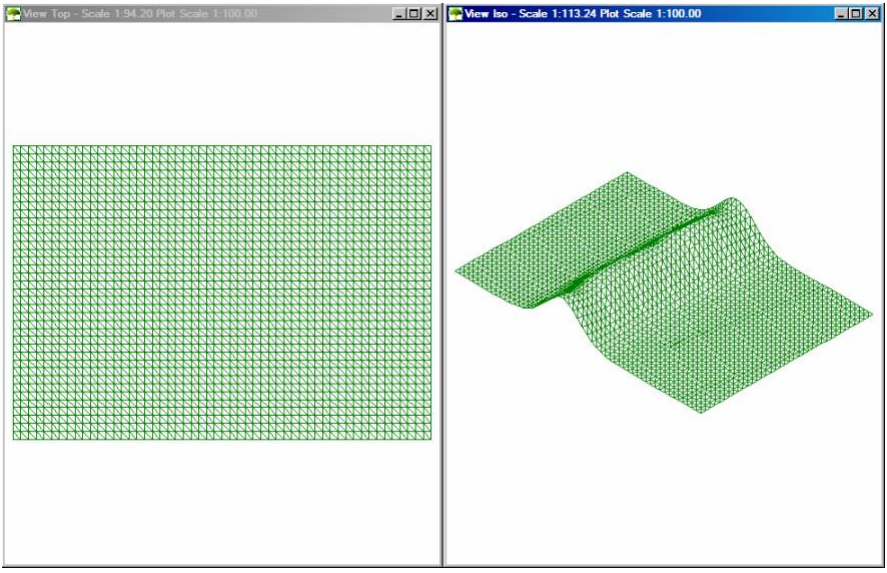
Hold down the left mouse button and drag your crosshair across the DTM to “modify” it.

The following images demonstrate how the command works.

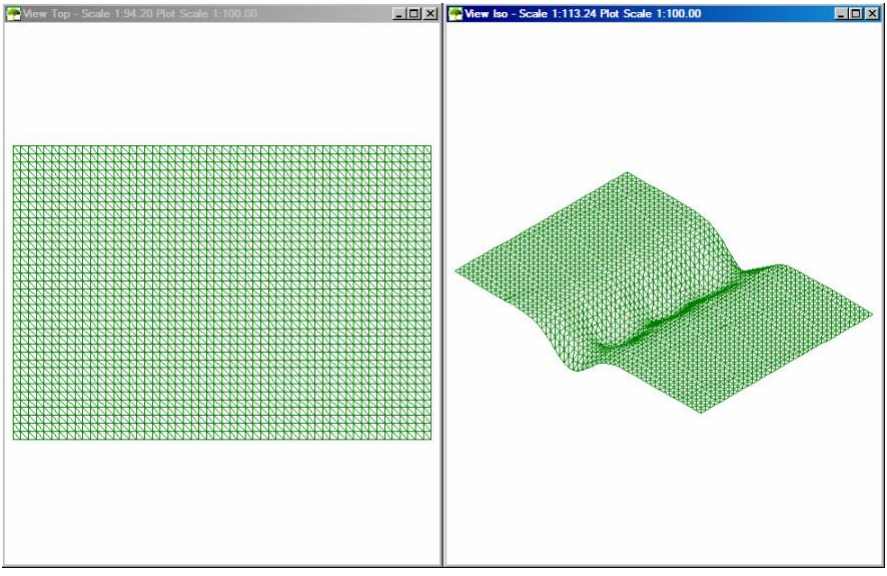
The first image below shows a small, flat DTM that is 10m wide by 7m high. It is flat only to demonstrate more clearly how this command works. The command will work on any DTM.



Setting the height parameter to 500, the area parameter to 1000 and dragging the crosshair slowly from point A to point B, gives the result shown below.

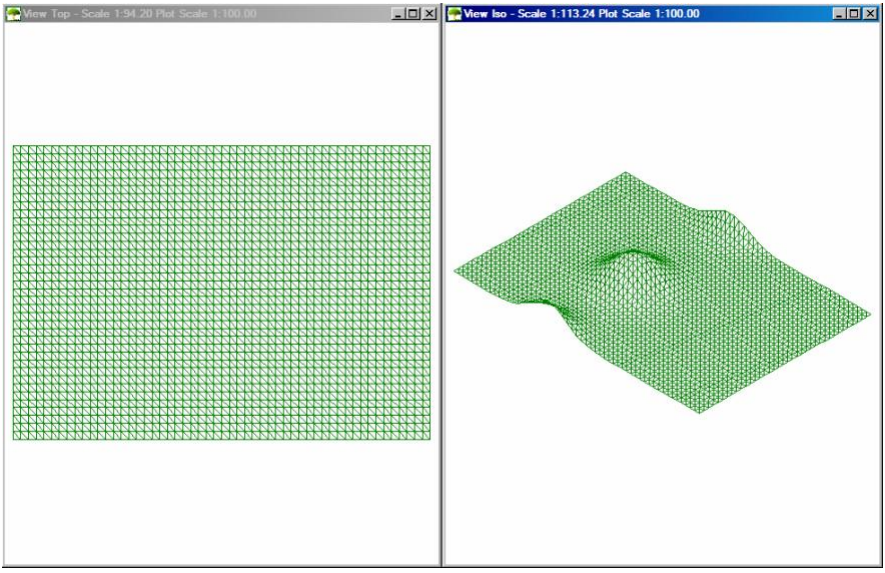


Setting the height parameter to -500, the area parameter to 1000 and dragging the crosshair slowly from point A to point B, gives the result shown below.

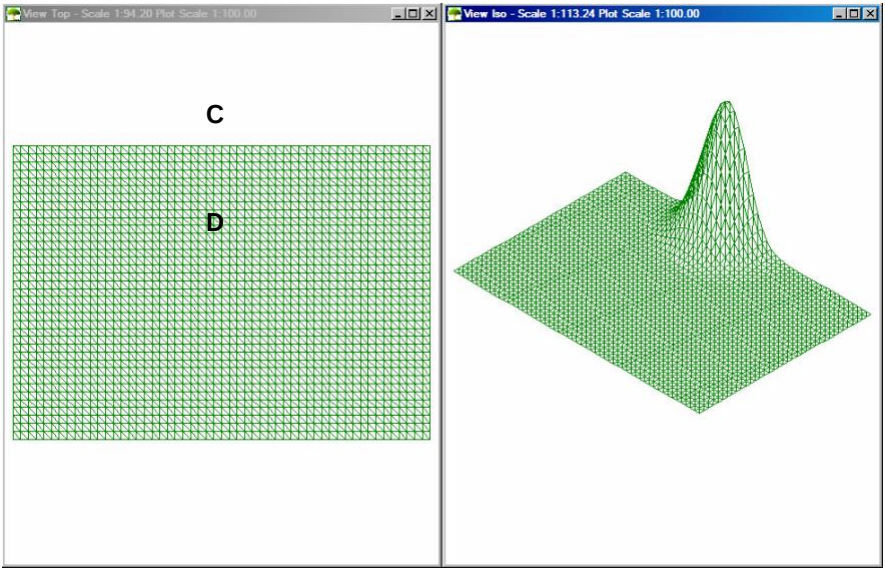


The speed at which the crosshair is dragged across the DTM will affect the result. Slower speeds will result in a more continuous modification.

For the images shown above the crosshair was dragged across the DTM fairly slowly. As a comparison, for the image below the crosshair was dragged across the DTM fairly quickly.



Extremely slow drag speeds can be used to exaggerate the modification. In the image below, the crosshair was dragged very slowly from C to D.



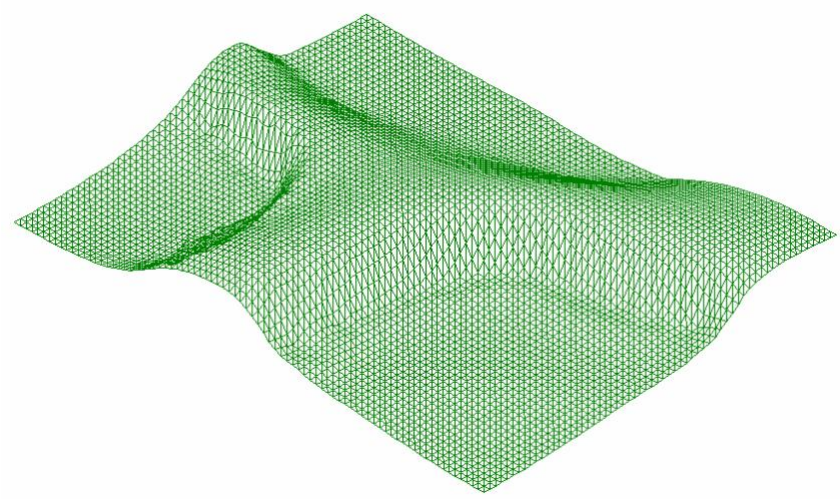
Insert Batter

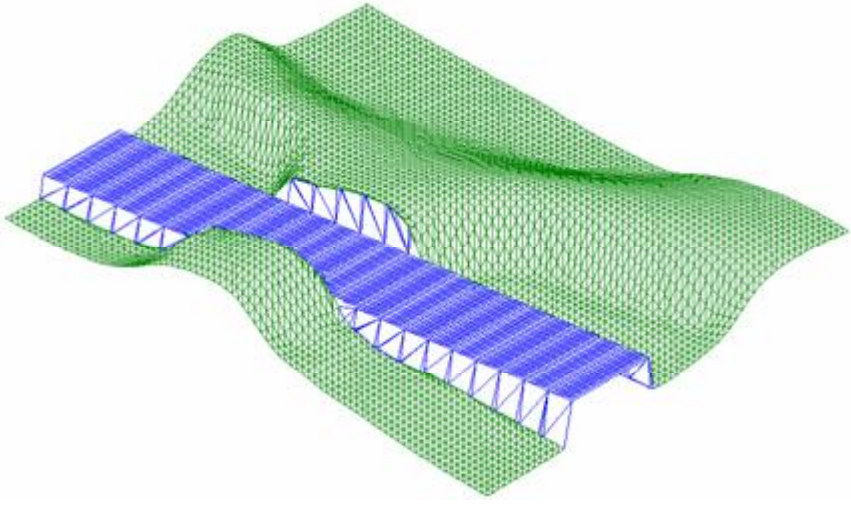
PURPOSE: To produce battered banks within an existing DTM.

The batter may represent the sides of a road, a driveway, a building slab, a swimming pool excavation, etc.

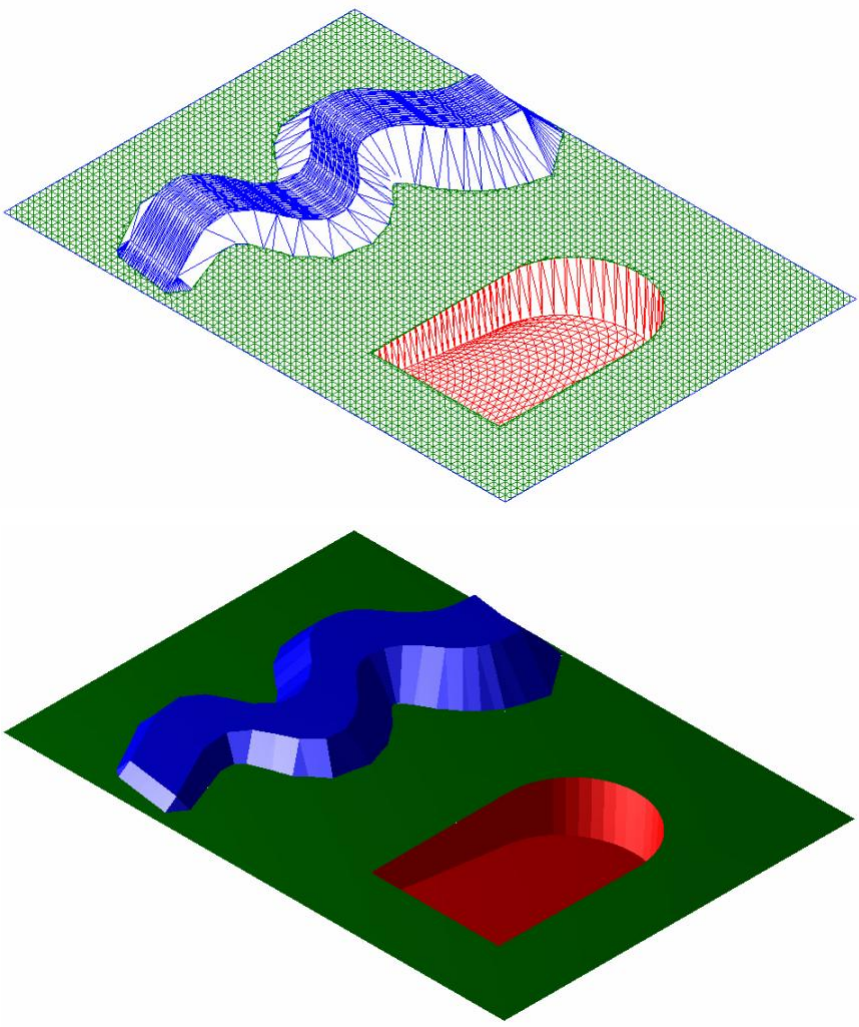
The batter can be created above and/or below the DTM.

The images below show before and after the blue “road” was put through the DTM and the batter created by this command.



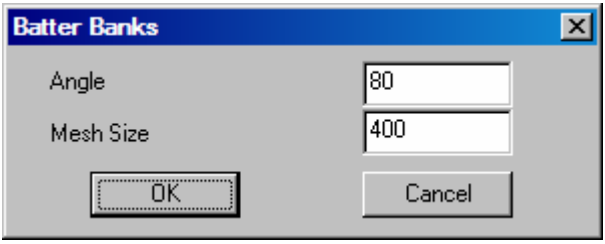


The image below shows two more examples, one with hidden lines removed, the other shaded, of the use of this command: a path twisting its way up a gentle slope and a pool excavation. Virtually any shape can be constructed using the "Insert Batter" command; it's just up to you to work out what you want! ☺



To insert a batter, a ruled surface that represents the landscaping feature (road, driveway, slab, pool, etc) must first be inserted in the correct position. Refer to the "***Real*CAD V5.x Reference and User Manual**", for information on Ruled Surfaces.

When the command is selected, the following dialog box is displayed.

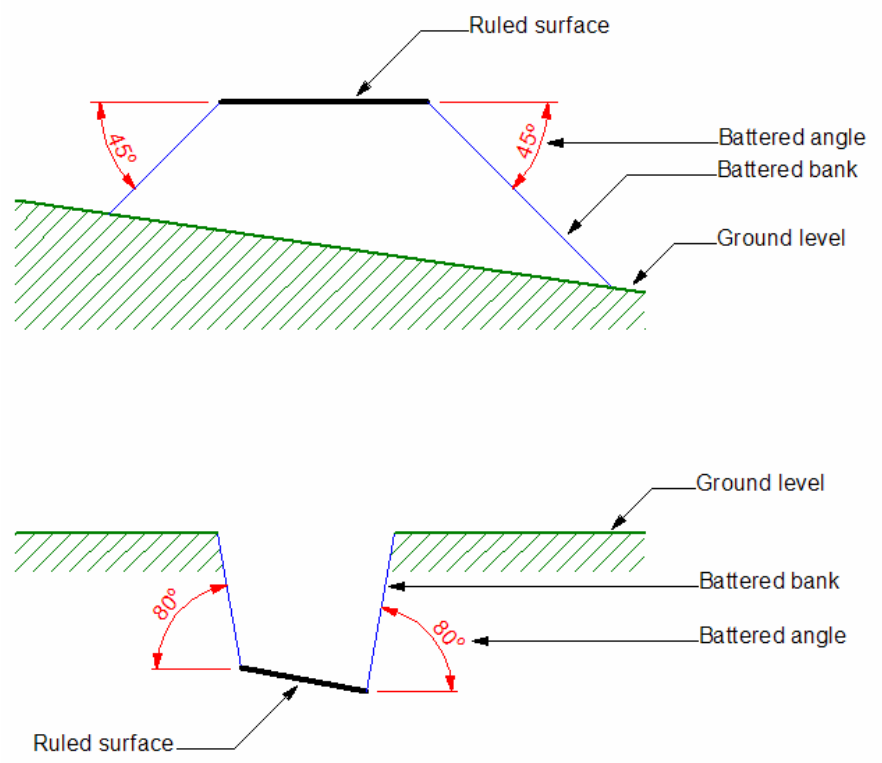


The text below explains the options in this dialog box.

Angle

This box lets you define the angle of the batter. The angle is measured from horizontal at the ruled surface.

The image below shows two examples of how the batter angle is measured: one with the ruled surface above ground level, the other with the ruled surface below ground level.



Mesh Size

Mesh Size is the number of triangles used within the DTM to generate the selected surface. This box lets you define how many triangles you want to use.

A higher number will give a more accurate DTM shape, but the DTM will take longer to generate.

As a rule of thumb, a mesh size of **500** is a good starting value for a selected ruled surface.

Tip: *If in doubt, use a smaller value as it will generate the DTM more quickly and make it easier for you to determine the appropriate value.*

Inserting the Batter

When you click the **OK** button you are prompted to "Locate the surface to batter". Select the ruled surface and the battering will be created. No further user input is required.

Note: *Depending on the complexities of the DTM and the ruled surface it may take a few minutes to generate the batter – be patient!* ☺

Note: *The batter is created with the current colour, style and weight, but it generated on the same layer as the DTM.*

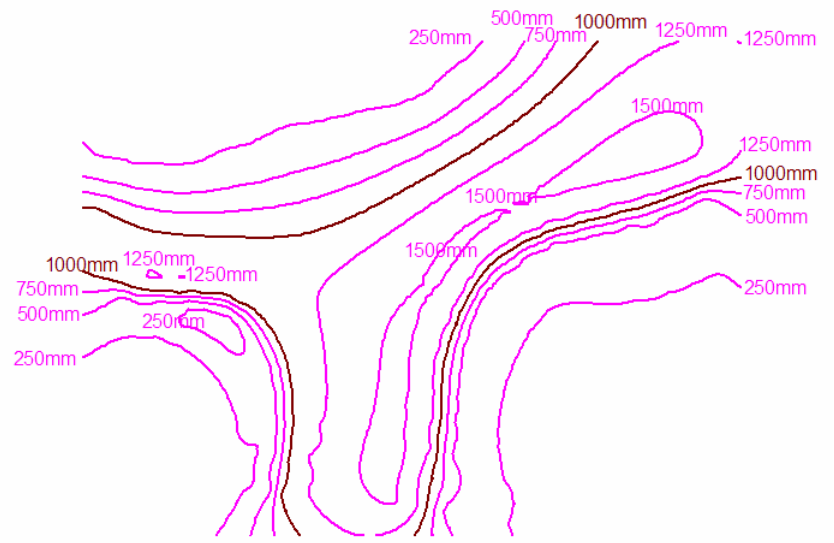
Note: *The entire batter process can be reversed with a single Undo command.*

Limitation: *A current limitation of this command is that the ruled surface should not extend beyond the edges of the DTM.*

Insert Contours

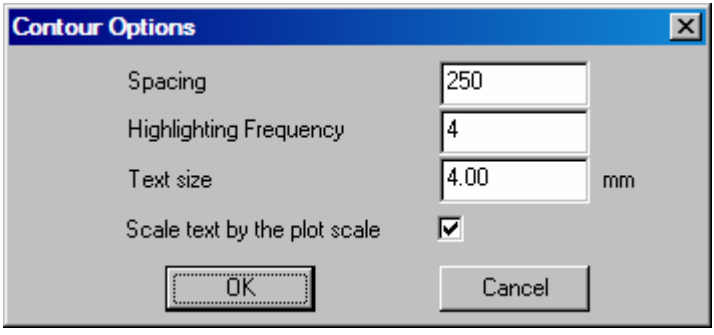
PURPOSE: To generate and insert contours based on the DTM. The contours are labelled with their heights.

An example of contours is shown below.



This command slices horizontally through the DTM at multiples of the specified height and generates the corresponding contours. The contours are curve entities and they are drawn at a Z height of zero so they can be used as simple 2D drawing elements.

When the command is selected, the following dialog box is displayed.



The text below explains the options in this dialog box.

Spacing

This box lets you define how far apart the contours are spaced. The value entered is the lowest contour height; subsequent contours are generated at multiples of that value. For example, if “250” is entered, contours are generated at 250, 500, 750, 1000 and so on.

The spacing is measured in millimetres.

Highlighting Frequency

By default, contours are drawn in the current colour. This box lets you define how often the colour is changed to the next colour number, for ease of identifying the contours. The dialog box above shows that that every fourth contour line would be drawn in the next colour. For example, if the current colour was 5 (magenta), the first three contours would be drawn in that colour, the fourth contour would drawn in colour 6 (brown), the next three contours would be drawn in colour 5 again, the eighth contour would be drawn in colour 6 again, and so on.

***Note**: Contours are also drawn in the current layer, style and weight, but only the colour changes as a highlight.*

***Tip**: If you want all contours drawn in the same colour set the Highlighting Frequency to a high value; higher than the expected number of contours, eg, 100.*

Text Size

This box lets you define the size at which the text showing the contour heights will be displayed on the screen. The contour heights are displayed near the ends of the contours, where possible.

The text size is influenced by the next option, Scale Text by the Plot Scale and can work in either of the following two ways

1. If the Scale Text by the Plot Scale option is ticked, then the text size entered is automatically multiplied by the view’s Plot Scale and the text is displayed on the screen at that scaled size.

   For example, if a text size of 4mm is entered and the Plot Scale is 100, the text will be displayed on screen at 400mm high.

   This technique lets you define the text size based on the height you want it to be when it is printed on paper. If the Plot Scale is changed for some

reason, the on-screen text height will automatically adjust, but, providing you print the drawing at the specified Plot Scale, the text will always print at the height specified.

For example, a text height of 4mm and a Plot Scale of 100 produces on-screen text at 400mm high. Printing the drawing at a scale of 1:100 will produce text 4mm high on the paper. Change the Plot Scale to 200 and the on-screen text will become 800mm high, but printing the drawing at a scale of 1:200 will still produce text 4mm high on the paper.

2. If the Scale Text by the Plot Scale option is not ticked, then the text size entered is the on-screen height. It is not, in any way, affected by the view's Plot Scale.

   For the text to be visible on the screen, the size must be calculated accordingly.

   This technique will produce printed text of a different size if the Plot Scale is changed.

   For example, if a text height of 400mm is specified and the Plot Scale is 100, the printed text will be 4mm high, but if the Plot Scale is changed to 200, the printed text would be 2mm high.

Scale Text by the Plot Scale

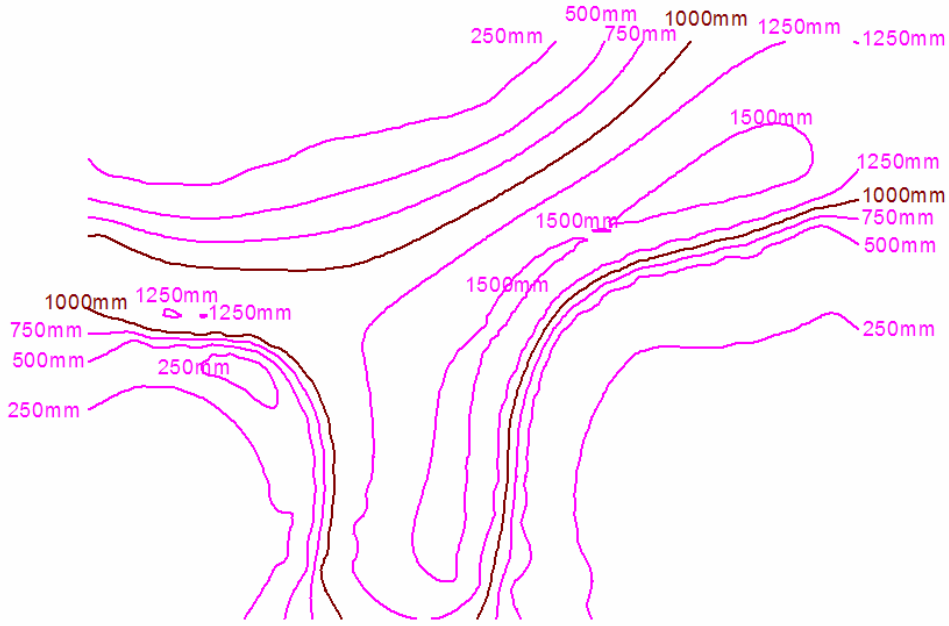
This tick box controls whether the text size entered is automatically multiplied by the view's Plot Scale for on-screen display. Refer to the previous section, Text Size for more details.

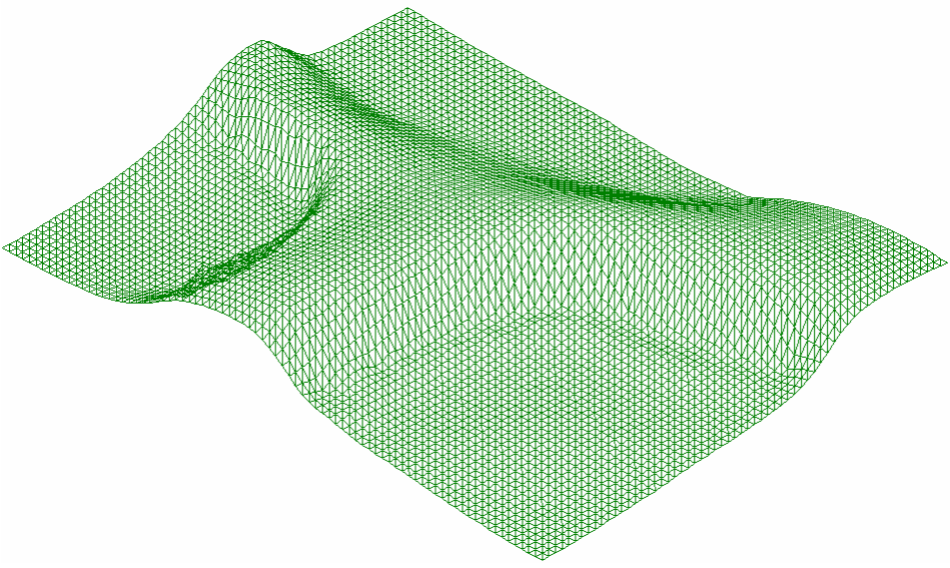
Inserting the Contours

When the **OK** button is clicked the contours are automatically generated; there is no further user input required.

***Note**: A DTM must already exist for this command to work.*

The first image below shows the contours generated from the DTM below it.


250mm
500mm
750mm
1000mm
1250mm
1250mm
1500mm
1250mm
1000mm
750mm
500mm
1500mm
1500mm
1000mm
1250mm
1250mm
750mm
500mm
250mm
250mm
250mm



Adjust Plant Heights

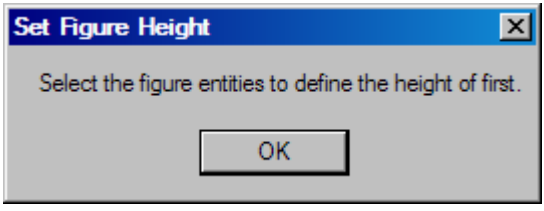
PURPOSE: To assign an “adjustment height” to plant. This height will be used to raise or lower the plant relative to the DTM when the Insert 3D Plants command (page 114) is run.

Normally the Insert 3D Plants command inserts the plants exactly on the actual DTM, but this command lets you over-ride that.

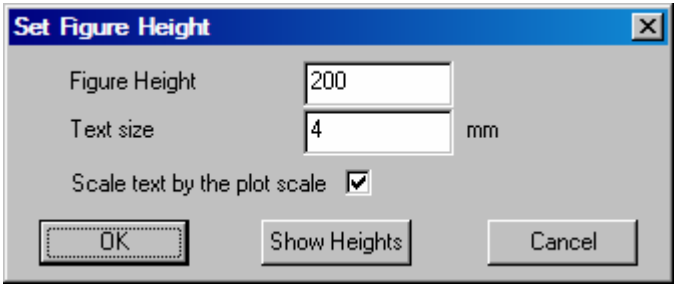
This is to facilitate a tree sitting in a pot or raised above the ground on a wall, etc. The idea is to give you flexibility for each plant/figure.

Visual examples of the effect of this command are shown in the next section, Insert 3D Plants, on page 114.

***Note**: A plant, or plants, must be selected before running the command. If this is not done, the following dialog box will appear.*



When the command is selected, the following dialog box is displayed.



The text below explains the options in this dialog box.

Figure Height

This box lets you set the height of the plant, relative to its location on the DTM. The height is in millimetres.

A positive number will raise the plant above the DTM; a negative number will lower the plant into the DTM.

Text Size

This box lets you define the size at which the text showing the plant heights will be displayed on the screen. The heights are displayed next to the plants.

The text size is influenced by the next option, Scale Text by the Plot Scale and can work in either of the following two ways

1. If the Scale Text by the Plot Scale option is ticked, then the text size entered is automatically multiplied by the view's Plot Scale and the text is displayed on the screen at that scaled size.

   For example, if a text size of 4mm is entered and the Plot Scale is 100, the text will be displayed on screen at 400mm high.

   This technique lets you define the text size based on the height you want it to be when it is printed on paper. If the Plot Scale is changed for some reason, the on-screen text height will automatically adjust, but, providing you print the drawing at the specified Plot Scale, the text will always print at the height specified.

   For example, a text height of 4mm and a Plot Scale of 100 produces on-screen text at 400mm high. Printing the drawing at a scale of 1:100 will produce text 4mm high on the paper. Change the Plot Scale to 200 and the on-screen text will become 800mm high, but printing the drawing at a scale of 1:200 will still produce text 4mm high on the paper.

2. If the Scale Text by the Plot Scale option is not ticked, then the text size entered is the on-screen height. It is not, in any way, affected by the view's Plot Scale.

   For the text to be visible on the screen, the size must be calculated accordingly.

   This technique will produce printed text of a different size if the Plot Scale is changed.

For example, if a text height of 400mm is specified and the Plot Scale is 100, the printed text will be 4mm high, but if the Plot Scale is changed to 200, the printed text would be 2mm high.

Scale Text by the Plot Scale

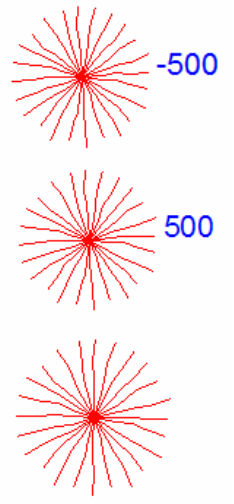
This tick box controls whether the text size entered is automatically multiplied by the view's Plot Scale for on-screen display. Refer to the previous section, Text Size for more details.

When the **OK** button is clicked, the height value entered is assigned to the selected plant or plants. There is no visual indication of this; the plants are simply being preparing for the Insert 3D Plants command. The height values can be displayed with the Show Heights button (see below).

Show Heights

When this button is clicked the height values are displayed next to each entity, at the text size specified, as shown below. The bottom plant has not has an adjustment height assigned to it.

When the height values are displayed, this button changes to "**Hide Heights**" letting you hide them if you don't need to see them any more.



Insert 3D Plants

PURPOSE: To place the plants onto the actual DTM based on their position on the landscape plan.

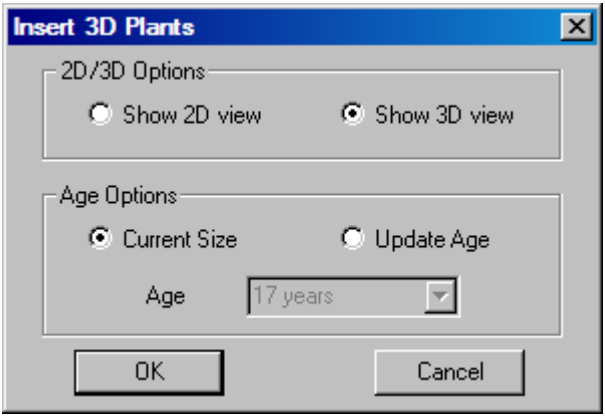
The 2D plan figures of the plants can be simply moved up onto the DTM or the elevation/3D figures of the plants, as defined in the plant database, can be inserted, replacing the 2D figures.

You can switch between the 2D and 3D figures at any stage.

The command finds the inserted plant figures, looks directly above (or below) them to find their corresponding locations on the DTM and then moves the 2D figures or inserts the elevation/3D figures as directed.

The figures can be inserted at their current size or updated for a particular age, based on information in the database, ie, maximum height, maximum width and maturity.

When the command is selected, the following dialog box is displayed.

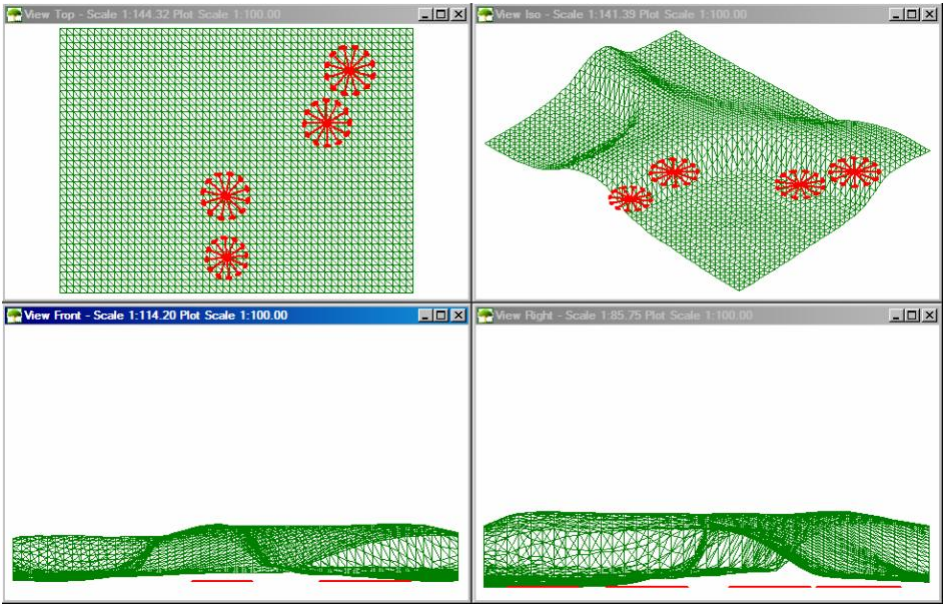


The text below explains the options in this dialog box.

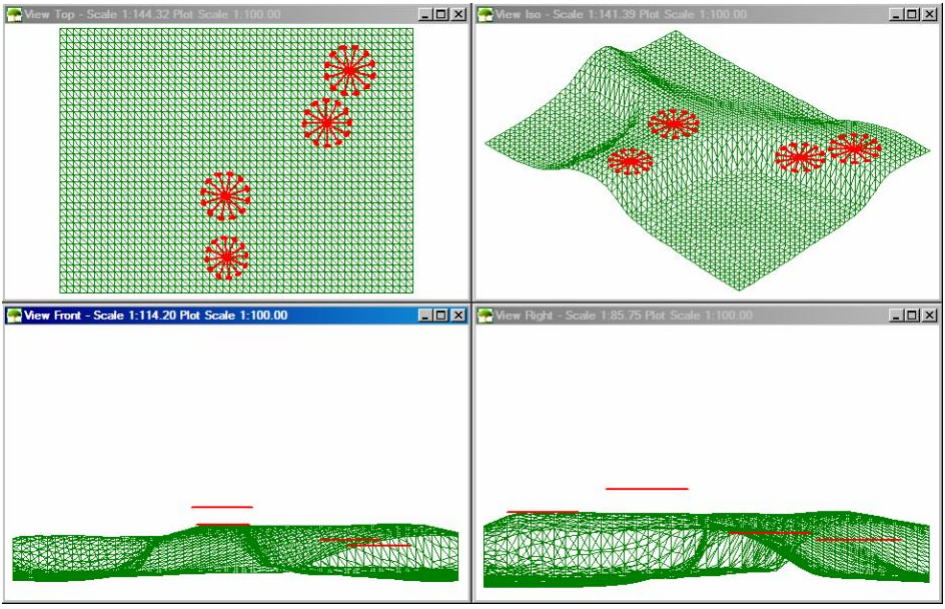
Show 2D View

This option tells LANDWorksCAD to display the 2D plan figures of the plants on the DTM.

The image below shows plants (red) that have been inserted normally into a plan. As you can see, they are all below the DTM.



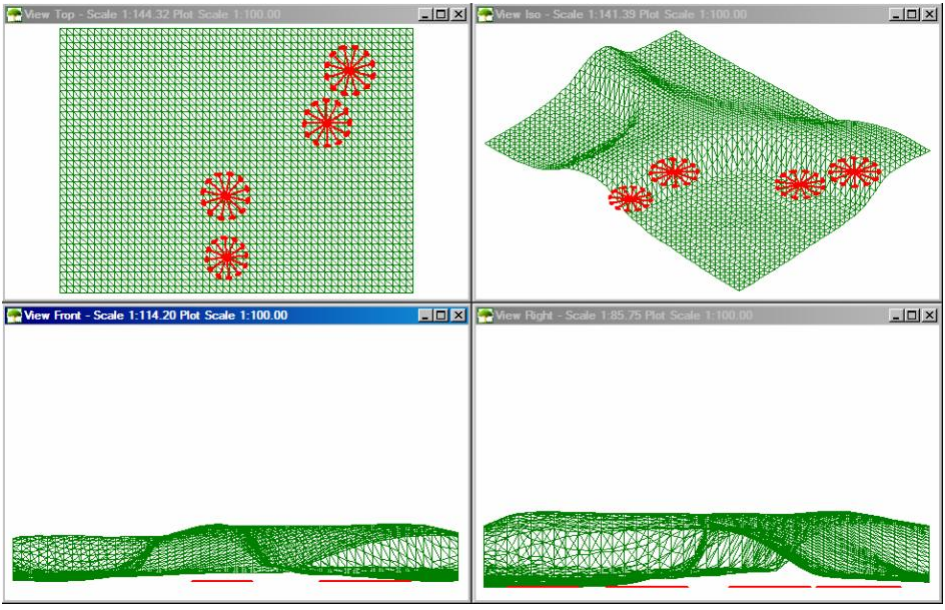
The plants in the image below have been processed by the Insert 3D Plants command with the "**Show 2D View**" option selected. You can see that the plants have been moved up on to the DTM. This is most obvious in the Front and Right views (the bottom two). Some plants have had their heights adjusted relative to the DTM with the Adjust Plant Heights command (see the previous section).



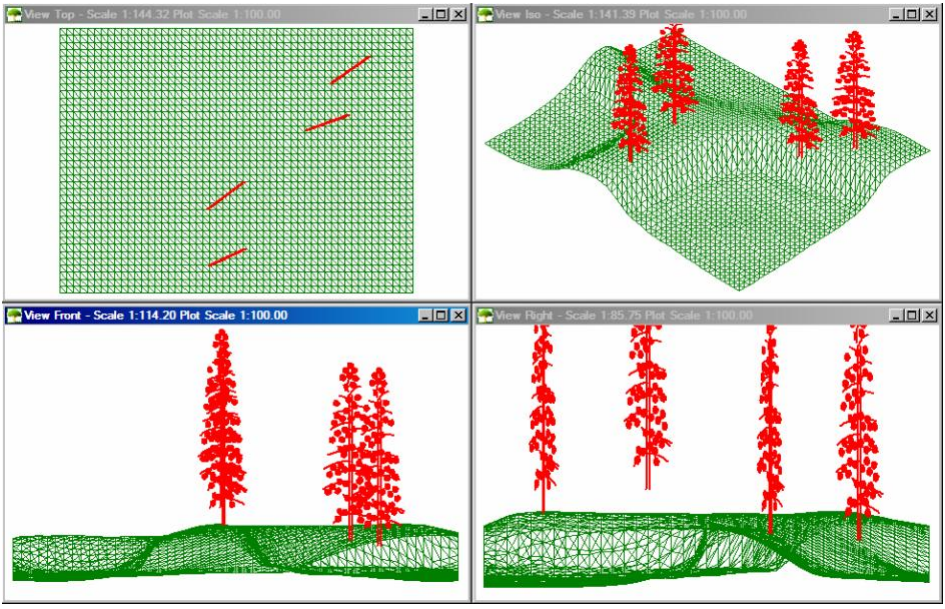
Show 3D View

This option tells LANDWorksCAD to display the elevation/3D figures of the plants on the DTM.

The image below shows plants (red) that have been inserted normally into a plan. As you can see, they are all below the DTM.



The plants in the image below have been processed by the Insert 3D Plants command with the "**Show 3D View**" option selected. You can see that the plants have been moved up on to the DTM. This is most obvious in the Front and Right views (the bottom two). Some plants have had their heights adjusted relative to the DTM with the Adjust Plant Heights command (see the previous section).



The type of elevation/3D figure inserted by this option is controlled by the data in the database. Column C in the database, headed "*elev. figure name*", contains the file names of the elevation/3D figures to be used.

***Note**: Appendix 1 – The LANDWorksCAD Plant Database contains more information on this.*

The figures can be, as described, either a flat elevation representation of the plant or a full 3D model.

If the figures are drawn as flat elevations, they will appear as shown in the image above. Note how the plants are shown as simple, straight lines in the Top view (top, right window).

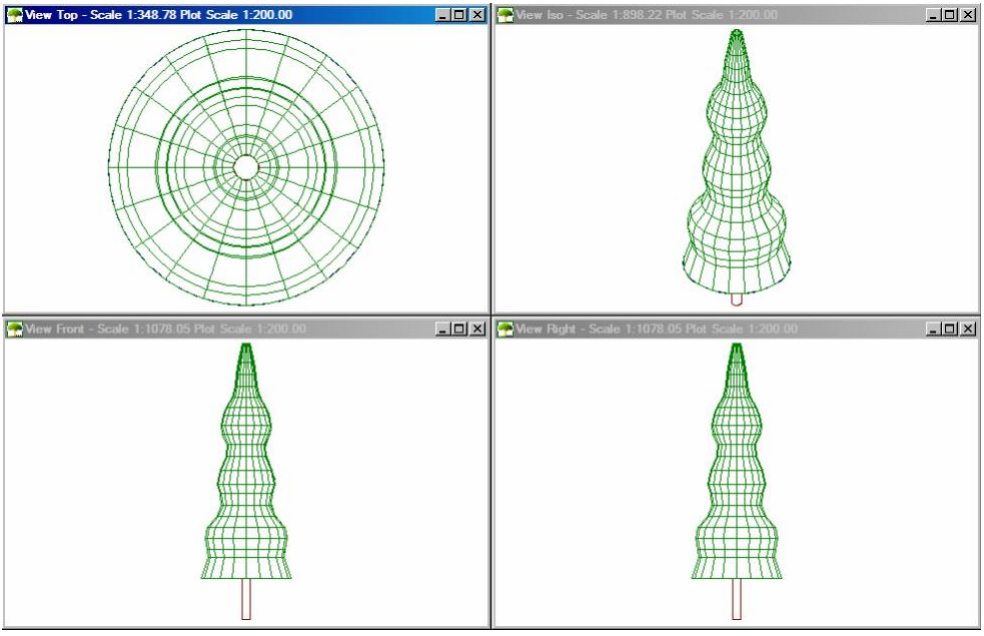
However, column K in the database, "*number of 2d figures*", can be used to make them look more 3D-like. The value in column K is the number of copies of the elevation figure that will be used. The default is one. Each copy is rotated evenly, thereby creating a 3D effect from a 2D drawing.

The table below shows plan and isometric views of a tree with varying number of 2d figures.

No. of 2d figures	1	2	3	4
Plan view				
Isometric view				

If the figures are drawn as full 3D models, they will display appropriately in all views. There is definitely no need to have multiple copies, so column K, "*number of 2d figures*", should be set to one.

The image below shows an example of a simple 3D plant, in four different views – Top, Iso, Front and Right.



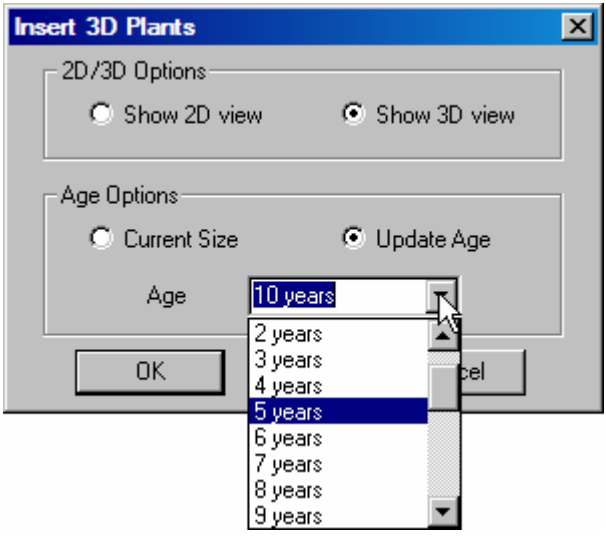
Tip: *Another way of achieving a more 3D-like effect, without the overhead of multiple elevation figures or a full 3D model, is to use a single, flat elevation figure, but have it automatically "oriented to the view". This technique means it will always be displayed parallel to the screen no matter what view you are in or what rotation is applied to the view and thus it will look like a full plant; it will never turn on its side. This effect can be achieved by turning on the "Orient to View" setting in the Figure Options (select Figure → Options from the menu).*

Current Size

This option tells LANDWorksCAD to insert the plant figures at their current size, ie, at the size they were drawn.

Update Age

This option lets you control the size of the plants, based on their age. When this option is selected the "Age" box below it is activated, as shown below, letting you select the age at which you want to display the plants. Click on the down arrow at the end of the box to display a list of ages to select from. You can also type in the age.



The resultant size of the plant is determined by the "Update Age" selected (above) and the plant's maximum width, maximum height and maturity from the plant database.

The plant's size is calculated as follows:

Age height = maximum height * age / maturity

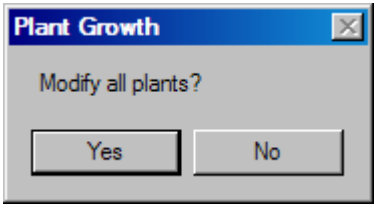
Age width = maximum width * age / maturity

Obviously the maximum height, maximum width and maturity data must exist in the database before the "Update Age" option can work.

Inserting the Plants

When the **OK** button is clicked, one of two things will happen:

1. If plants were selected before the command was run they will be processed as per the settings.
2. If no plants were selected before the command was run, the following dialog box will be displayed.



Click "Yes" to process all plants as per the settings or click "No" to cancel the command. You can then select only the plants that are to be processed and run the command again.

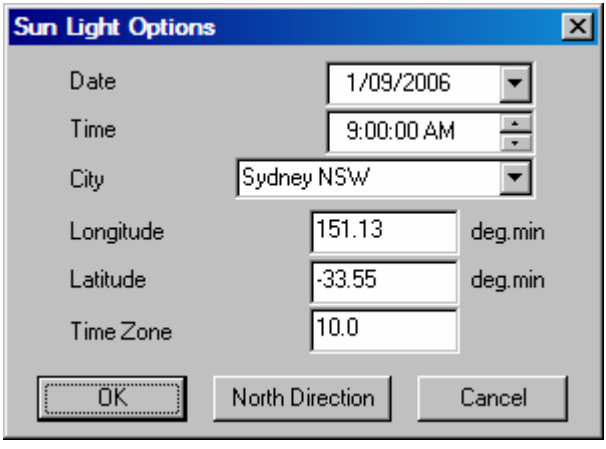
Insert Sun Light

PURPOSE: To insert a light source in your model that represents the Sun.

When modelling in 3D, this light source can be used to generate shadows in a Raytraced view.

A sample 3D, raytraced view, with shadows, is shown below.

When the command is selected, the following dialog box is displayed.



The text below explains the options in this dialog box.

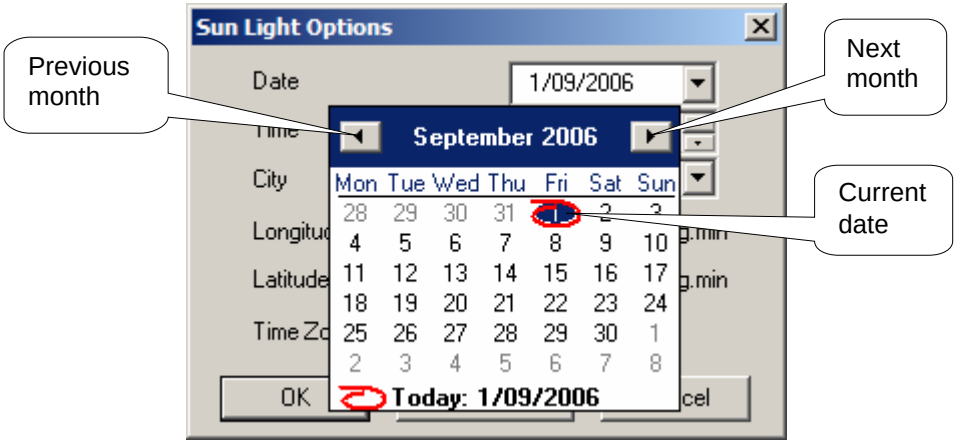
Date

This box lets you choose the date that will be used to determine the location of the Sun.

The current date is automatically displayed, but it can be altered to suit your requirements.

Click on the triangle at the end of the box to display a calendar, as shown below. The controls for the calendar are indicated.

Click on the required date in the calendar to display it in the box.



***Note**: The date can also be edited manually. Simply click on the number representing the day, date or year and type in the required number(s).*

Time

This box lets you choose the time of day that will be used to determine the location of the Sun.

The current time is automatically displayed, but it can be altered to suit your requirements.

The format of the time is *hour:minute:second AM/PM*.

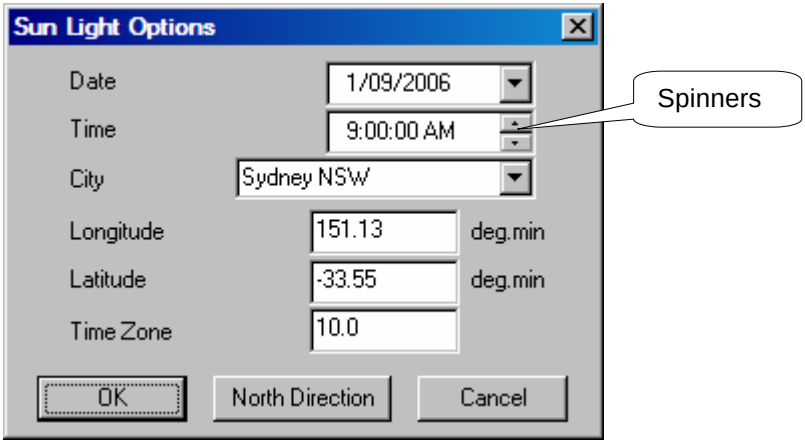
To change the numeric part of the time, click on the number and then either:

- type in the new number, or
- click on the up and down spinners , as indicated below

To change the AM/PM part of the time, click on it then either:

- type A or P, or
- click on the up and down spinners , as indicated below

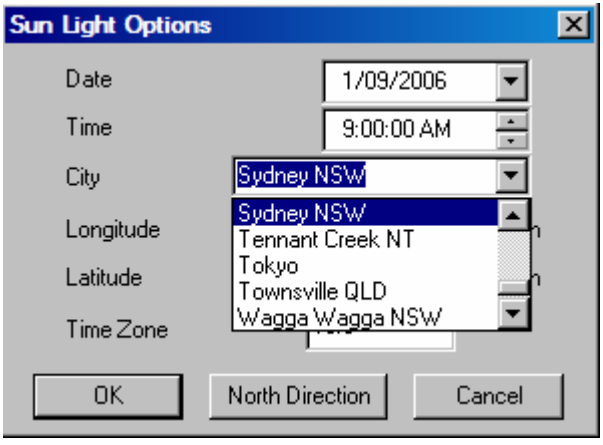
***Note**: AM/PM will change automatically if you change the hour number such that you pass 12 noon or 12 midnight.*



City

This box lets you choose the city that will be used to determine the position of the Sun.

Click on the triangle at the end of the box to display a list of cities, as shown below.



You can scroll through the list to find the city you want or you can start typing in the name of the city. As you type in the name, the list will adjust to display cities that match what you have typed in, eg, if you type “m”, the list will adjust to display city names that begin with “m”.

Click on the required city name to display it in the box.

The city names are stored in a file called “**cities.dat**”, which can be found in your LANDWorksCAD folder. It is a simple text file and can be edited to suit your needs.

The format is as follows:

CityName,Longitude,Latitude,Time Difference from GMT,

(GMT = Greenwich Mean Time)

A sample extract is shown below.

San Francisco,-122.27,37.45,-8.0,
Seoul,127.00,37.30,9.0,
Singapore,103.50,1.20,8.0,
Sydney NSW,151.13,-33.55,10.0,
Tennant Creek NT,134.11,-19.39,9.5,
Tokyo,139.45,35.40,9.0,
Townsville QLD,146.49,-19.16,10.0,
Wagga Wagga NSW,147.22,-35.07,10.0,
Winnipeg,-97.10,49.53,-6.0,
Yulara NT,130.55,-25.10,9.5,

***Note**: Spaces are only allowed in the city name.*

Longitude

This box automatically displays the longitude of the selected city.

***Note**: If for some reason the longitude is displayed incorrectly it can be edited. Simply click in the box and enter the correct value. The format of the longitude is degrees.minutes.*

Latitude

This box automatically displays the latitude of the selected city.

***Note**: If for some reason the latitude is displayed incorrectly it can be edited. Simply click in the box and enter the correct value. The format of the latitude is degrees.minutes.*

Time Zone

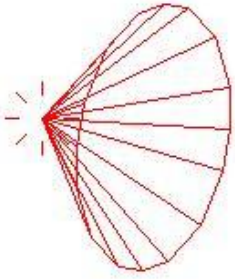
This box automatically displays the time difference from GMT of the selected city.

***Note**: If for some reason the time zone is displayed incorrectly it can be edited. Simply click in the box and enter the correct value.*

Inserting the Sun

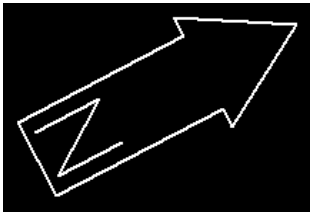
When the **OK** button is clicked a light entity is inserted into the model at an appropriate height and orientation to represent the Sun. No further user input is required.

The light entity looks like a small cone, similar to the image shown below.



North Direction Button

The Y axis (as indicated by the workplane icon) is assumed to be pointing north, however the "**North Direction**" button lets you specifically define north by inserting a north figure, as shown below. The orientation of this north figure will influence the location of the Sun in the drawing.



You are first prompted for the origin (position) of the figure; left click once to define this.

You are then prompted for the direction of the figure. A rubber band is displayed between the origin point and your crosshair to help you. Left click again to indicate the direction of north and the figure is inserted.

***Note**: If the north direction is changed after the Sun has been inserted, the Sun must be re-inserted.*

***Note**: Deleting the north figure is effectively the same as changing it. North will have been reset to match the Y axis, so the Sun must be re-inserted.*

The default north point figure is just that; a LANDWorksCAD figure, and can therefore be changed if you don't like it.

It is a file called *NorthDirection.cad* and can be found in your LANDWorksCAD folder.

To change it, simply open the file, edit it and save it. Alternatively you can draw your own north point figure from scratch and save it as *NorthDirection.cad* in your LANDWorksCAD folder.

If you have already inserted the north point in a drawing, the drawing must be saved and re-opened to see the new version.

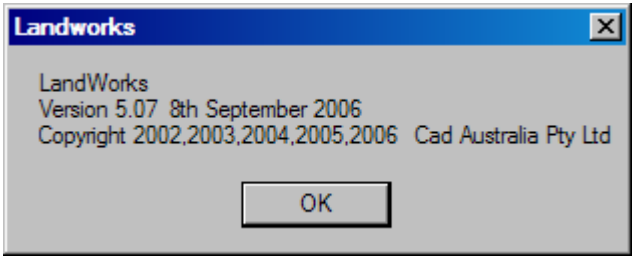
***Note**: The north point figure must be called NorthDirection.cad and it must reside in the LANDWorksCAD folder.*

About

?

PURPOSE: To show the **version number** and **release date** of your LANDWorksCAD software.

When the command is selected, a dialog box similar to the following is displayed:



If a CAD International support person asks you what version of LANDWorksCAD you are using, this is where you find it. When reporting your version it is important to also include the date.

Appendices

The following appendices provide information about the LANDWorksCAD database that is useful to know, but not essential for day to day use of the software.

Appendix 1 – The LANDWorksCAD Plant Database

Structure

The LANDWorksCAD database of plants is a Microsoft Excel spreadsheet file called **LANDWorksPlantDatabase.xls**. It must be called this name and it must be stored in the LANDWorksCAD folder on your computer's hard disk.

The LANDWorksCAD-V5 plant database contains three worksheets:

- one for existing plants
- one for concept plants
- one for plants

The **Existing Plants** worksheet lets you set up simple figures to represent the plants that already exist in your projects.

The **Concept Plants** worksheet lets you set up simple figures to use when creating a concept plan for your clients.

The **Plants** worksheet is where you store all the plant information related to existing & proposed plants. The information is used for labelling the existing and proposed plants as well as creating schedules & legends. Concept plants are labelled differently.

Note: *The word "plant" is used to mean plants and trees.*

Format

The format of the worksheets is quite simple:

- Each row in the database contains data that relates to a single plant only, eg, row 32 contains data for the plant called "Abies grandis".
  Exceptions to this "rule" are explained below.
- Each column contains a particular type of data for each plant, eg, column N contains the botanical name of each plant.

Note*: Excel functionality used within the database is noted where appropriate, but is not necessarily explained fully in this document. For more information consult the Excel Help files or call the CAD International support line.*

Rows

The format of the rows is identical for each worksheet and is as follows:

Row 1	–	is used for section headings, eg, “CAD Data”, “Names”, “General Appearance”, Leaves”, etc.
Rows 2-27	–	are used to provide selection data for row 32 and higher numbered rows, where required.
Row 28	–	is used to repeat the section headings from Row 1. This is done to make it easier to identify where you are in the spreadsheet when freezing rows (Excel functionality).
Row 29	–	is used for specific data headings, eg, “plan figure name”, “Botanical Name”, “Habit”, etc.
Rows 30, 31	–	are not used, but do not delete them.
Rows 32 and higher	–	contain the plant data.

Rows 1-27, 30 and 31 are initially hidden in the supplied database. This is to prevent users from accidentally, or intentionally, editing the data contained in these rows before they really know what the data is for. These rows can, however, be displayed without affecting the functionality of the database in any way. For instructions on displaying these hidden rows refer to Appendix 3 – Working with the Selection Data on page 143.

Some row constraints of the database you should be aware of are:

1. You must not add or delete rows within rows 1-31.
2. The plant data must start in row 32 and continue in higher numbered rows, ie, rows 33, 34, 35 …. 99, 100, 101 … 1000, 1001, etc.
3. There must be no blank rows in the plant data, ie, row 32 and higher numbered rows. A blank row is taken to be the end of the plant list.

Some row freedoms of the database you should be aware of are:

1. In the plant data area of the worksheets, ie, row 32 & higher numbered rows, you can add as many rows as you need, delete rows, move rows, virtually anything you want.
2. You can add to and/or edit the selection data contained in rows 2-27. This is explained in Appendix 3 – Working with the Selection Data on page 143.
3. The data headings in row 29 (columns L-BX only) can be edited to suit your needs. The words can be changed completely; they can be changed to be all capitals, etc.

Columns

The format of the columns is similar, but not identical, for each worksheet.

Existing Plants worksheet

The Existing Plants worksheet contains 5 columns of data, as shown below.

	A	B	C	D	E
28	Actual Data	CAD Data		Information	
29	22/11/2006	plan figure name	image file name	description	category
32		Landscape-Symbols\Plants\%existing tree to be removed.cad	Landscape-Symbols\Plants\%concept-1.JPG	Remove	
33		Landscape-Symbols\Plants\%existing tree to be retained.cad	Landscape-Symbols\Plants\%concept-1.JPG	Retain	
34					

The use of the columns is explained below.

Column A – is not used at present. You should not remove it, but can use it for notes, comments, etc.

CAD Data

Column B – **Plan Figure Name** – defines the CAD drawing file that will be used to represent the existing plant when displaying the plants normally in plan view.

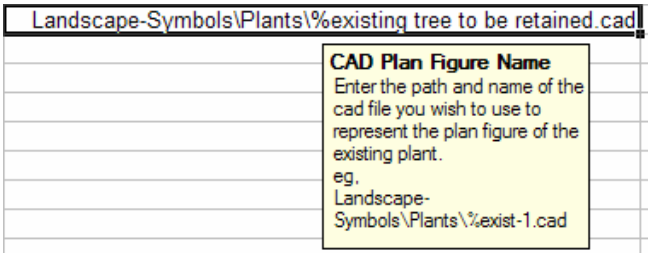
Column C – **Image File Name** – defines the image file (bmp or jpg format) that will be used to represent the existing plant when displaying the plants for presentation purposes in plan view.

Information

Column D – **Description** – describes the plant. The description for each plant must be unique.

Column E – **Category** – defines the category of your existing plant.

If you click in a cell a small box will appear showing the column heading and a short description of what the data in the cell is used for. An example is shown below.



Some column constraints of this worksheet you should be aware of are:

1. You must not add, delete or move columns within columns A-C.
2. You must not edit in any way the headings in row 29 for columns A-C.
3. The plant data must exist in columns D and E.

Some column freedoms of this worksheet you should be aware of are:

1. In the plant data area of the worksheet, ie, columns D and E, you can add columns, delete columns and move columns.
2. Data in the columns can be sorted in any order you require, eg, it can be sorted by plan figure name, by description, etc. Appendix 4 – Sorting the Plant Database in Excel on page 153 explains how to do this.

Concept Plants worksheet

The Concept Plants worksheet contains 10 columns of data, as shown below.

	A	B	C	D	E	F	G	H	I	J
28	Actual Data	CAD Data				Concept Information				
29	22/11/2006	plan figure name	elev. figure name	image file name	elev. image file name	description	category	shape	heading	label
32		ndscape-Symbols\Plants\%001 CAD	ndscape-Symbols\Plants\%001-E.CAD	bols\Plants\%concept-1.JPG	-Symbols\Plants\%concept-1-E.JPG	description 1	Tree	Triangular	Place Heading here	Place your description here
33		andscape-Symbols\Plants\%007.cad	ndscape-Symbols\Plants\%007-E.cad	bols\Plants\%concept-1.JPG		description 2	Tree	Oval	Conifers	This plant will create a barrier against
34		ndscape-Symbols\Plants\%042a.cad	ndscape-Symbols\Plants\%051-E.CAD			description 3	Tree	Oval	Evergreen	
35		andscape-Symbols\Plants\%005.cad	ndscape-Symbols\Plants\%005-E.cad			description 4	Shrub	Spikey	Desert Shrubs	
36		ymbols\Plants\%Flower Border 4.cad	bols\Plants\%Flower Border 4-E.CAD			description 5	Border	Soft	Floral Border	
37		andscape-Symbols\Plants\%014.cad	ndscape-Symbols\Plants\%014-E.cad			description 6	Tree	Triangular	Dense Windbreak	
38		andscape-Symbols\Plants\%023.cad	ndscape-Symbols\Plants\%016-E.cad			description 7	Tree	Bell	Broad cover	
39		andscape-Symbols\Plants\%024.cad	ndscape-Symbols\Plants\%035-E.cad			description 8	Tall Shrub	Spikey	High Level Tropical	
40										

The use of the columns is explained below.

Column A – is not used at present. You should not remove it, but can use it for notes, comments, etc.

CAD Data

Column B – **Plan Figure Name** – defines the CAD drawing file that will be used to represent the concept plant when displaying the plants normally in plan view.

Column C – **Elev. Figure Name** – defines the CAD drawing file that will be used to represent the concept plant when displaying the plants normally in a non-plan, ie, 3D, views.

Column D – **Image File Name** – defines the image file (bmp or jpg format) that will be used to represent the concept plant when displaying the plants for presentation purposes in plan view.

Column E – **Elev. Image File Name** – defines the image file (bmp or jpg format) that will be used to represent the concept plant when displaying the plants for presentation purposes in non-plan, ie, 3D, views.

Concept Information

Column F – **Description** – describes the plant. The description for each plant must be unique.

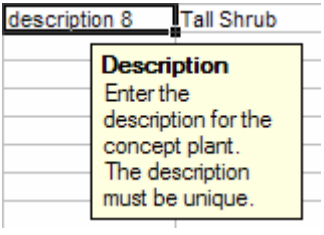
Column G – **Category** – defines the category of the concept plant. Select from a list.

Column H – **Shape** – defines the general shape of the concept plant. Select from a list.

Column I – **Heading** – defines a heading that can be semi-automatically added to the drawing, with the label (see below), to identify your plant.

Column J – **Label** – defines a label that can be semi-automatically added to the drawing, with the heading (see above), to identify your plant.

If you click in a cell a small box will appear showing the column heading and a short description of what the data in the cell is used for. An example is shown below.



Some column constraints of the database you should be aware of are:

1. You must not add, delete or move columns within columns A-E.
2. You must not edit in any way the headings in row 29 for columns A-E.
3. The plant data must start in column F and continue in higher lettered columns, ie, columns G, H, etc.

Some column freedoms of the database you should be aware of are:

1. In the plant data area of the worksheet, ie, columns E and higher, you can add columns, delete columns and move columns.
2. Data in the columns can be sorted in any order you require, eg, it can be sorted by Description, by Category, etc. Appendix 4 – Sorting the Plant Database in Excel on page 153 explains how to do this.

Plants worksheet

The Plants worksheet contains 76 columns of data, some of which are shown below.

	L	M	N	O	P	Q	R	S	T	U
28	Names							Favourit	Type	General Appearance
29	abbreviation	abbreviation-2	botanical name	family	common name	common name 2	Cultivars	favourites	type	habit
32	Ab gr		Abies grandis		Grand Fir				Conifer	
33	Ac ba		Acacia baileyana	Fabaceae, sub fam. Mim	Cootamundra Wattle	Golden Mimosa	Purpurea, Aurea		Tree	
34	Ac bu		Acacia buxifolia	Fabaceae, sub fam. Mim	Box Leaf Wattle				Shrub	
35	Ac de		Acacia decurrens	Fabaceae, sub fam. Mim	Early Black Wattle	Green Wattle			Tree	
36	Ac sa		Acacia sowdenii		Western Myall				Tree	
37	Ac sp		Acacia spetabilis		Prostate Wattle					
38	Ac re		Acer rubrum		Red Maple					
39	Ac he		Actinotus helianthi	Apiaceae	Flannel Flower	Sydney Flannel Flower	Federation Stars			
40	Ad ra		Adiantum hispidulum	Adiantaceae	Maidenhair Fern	Syn. A. aethiopicum			Fern	

The use of the columns is explained below.

Column A – is not used at present. You should not remove it, but can use it for notes, comments, etc.

CAD Data

Column B – **Plan Figure Name** – defines the basic 2D CAD drawing file that will be used to represent the proposed plant when displaying the plants normally in plan view.

Column C – **Elev. Figure Name** – defines the basic 2D CAD drawing file that will be used to represent the proposed plant when displaying the plants normally in a non-plan, ie, 3D, view.

Column D – **3D Figure Name** – is no longer used, but the column must not be deleted.

Column E – **Image File Name** – defines the image file (bmp or jpg) that will be used to represent the proposed plant when displaying the plants for presentation purposes in plan view.

Column F – **Detail Plan Figure Name** – defines the more detailed 2D CAD drawing file that will be used to represent the proposed plant when displaying the plants normally in plan view.

Column G – **Detail Elev. Figure Name** – defines the more detailed 2D CAD drawing file that will be used to represent the proposed plant when displaying the plants normally in a non-plan, ie, 3D, views.

Column H – **Elev. Image File Name** – defines the image file (bmp or jpg) that will be used to represent the proposed plant when displaying the plants for presentation purposes in non-plan, ie, 3D, views.

Column I – **Line Type** – is not used at present. You should not remove it because it is reserved for future development.

Column J – **Hatch Pattern** – is not used at present. You should not remove it because it is reserved for future development.

Column K – **Number of 2d Figures** – defines the number of 2D elevation figures you want to be used to generate a more 3D looking plant. The section called Show 3D View on page 116 explains how this data is used.

Names

Column L – **Abbreviation** – defines the abbreviated name of the plant. This can be any format.

Column M – **Abbreviation-2** – defines a second abbreviated name of the plant, if required. This can be any format.

Column N – **Botanical name** – defines the Botanical name of the plant. The botanical name must be unique.

Column O – **Family** – defines the Family the plant belongs to.

Column P – **Common Name** – defines the Common Name of the plant.

Column Q – **Common Name 2** – defines the secondary Common Name of the plant, if there is one.

Column R – **Cultivars** – defines the Cultivars of the plant.

Favourites

Column S – **Favourites** – defines if the plant is one your favourites. Select Yes or No from a list.

Type

Column T – **Type** – defines the type of plant. Select from a list.

General Appearance

Column U – **Habit** – defines the growth habit of the plant. Select from a list.

Column V – **Texture** – defines the overall texture of the plant. Select from a list.

Column W – **Maximum Width** – defines the maximum width the plant will grow to if planted in your region in typical conditions. Measured in millimetres (mm).

Column X – **Maximum Height** – defines the maximum height the plant will grow to if planted in your region in typical conditions. Measured in millimetres (mm).

Column Y – **Maturity Age** – defines the age, in years, when the plant will typically be mature.

Column Z – **Density** – defines the density of the plant. Select from a list.

Column AA – **Roots** – defines the root structure of the plant. Select from a list.

Column AB – **Seasonal** – defines the seasonal nature of the plant. Select from a list.

Leaves

Column AC – **Leaf Size** – defines the leaf size of the plant. Select from a list.

Column AD – **Leaf Character** – defines the leaf character of the plant. Select from a list.

Column AE – **Leaf Colour** – defines the leaf colour of the plant. Select from a list.

Column AF – **Autumn/Fall Leaf Colour** – defines the leaf colour of the plant in Autumn/Fall. Select from a list.

Flower

Column AG – **Flowers Season** – defines the dominant flowering season of the plant. Select from a list.

Column AH – **Flower Type** – defines the type of flower of the plant. Select from a list.

Column AI – **Months of Bloom** – defines the typical month(s) of bloom of the plant. Select from a list.

Column AJ – **Flower Colour** – defines the typical flower colour of the plant. Select from a list.

Fruit

Column AK – **Fruit Type** – defines the type of fruit of the plant. Select from a list.

Column AL – **Fruit Size** – defines the size of the fruit of the plant. Select from a list.

Column AM – **Fruit Season** – defines the typical fruiting season of the plant. Select from a list.

Column AN – **Edible** – defines the edibility of the fruit of the plant. Select from a list.

Column AO – **Fruit Colour** – defines the colour of the fruit of the plant. Select from a list.

Bark

Column AP – **Bark Colour** – defines the colour of the bark of the plant. Select from a list.

Column AQ – **Bark Texture** – defines the texture of the bark of the plant. Select from a list.

Column AR – **Bark Shedding** – defines if the bark of the plant sheds or not. Select from a list.

Region

Column AS – **Global Origin** – defines the global origin of the plant. Select from a list.

Column AT – **Bioclimatic Zone** – defines the bioclimatic zone of the plant. Select from a list.

Column AU – **Zone Number** – defines the zone number of the plant. Select from a list.

Column AV – **Climate Group** – defines the climate group of the plant. Select from a list.

Typical Style

Column AW – **Style** – defines the style of the plant. Select from a list.

Column AX – **Interest** – defines the seasonal interest of the plant. Select from a list.

Column AY – **Design Accent** – defines the design accent of the plant. Select from a list.

Uses

Column AZ – **Location Uses** – defines the typical location where the plant is used. Select from a list.

Column BA – **Special Uses** – defines any special uses for the plant. Select from a list.

Column BB – **Attracts** – defines what the plant attracts. Select from a list.

Position

Column BC – **Sun** – defines the type of sun/shade the plant likes. Select from a list.

Column BD – **Tolerances** – defines what the plant is tolerant to. Select from a list.

Column BE – **Soil Type** – defines the preferred soil type for the plant. Select from a list.

Column BF – **Soil pH** – defines the preferred soil pH for the plant. Select from a list.

Column BG – **Soil Condition** – defines the preferred soil condition for the plant. Select from a list.

Column BH – **Hydrozone** – defines the preferred hydrozone for the plant. Select from a list.

Maintenance

Column BI – **Maintenance Rating** – defines the maintenance rating for the plant. Select from a list.

Column BJ – **Water** – defines the water requirements of the plant. Select from a list.

Column BK – **Pruning** – defines how often the plant should be pruned. Select from a list.

Column BL – **Fertilization** – defines the type of fertilizer required for the plant. Select from a list.

Column BM – **Integrated Pest Management** – defines the type of pest management required for the plant.

Column BN – **Watering Option 1** – defines how often the plant should be watered. Select from a list.

Column BO – **Watering Option 2** – defines additional information on how the plant should be watered.

Problems

Column BP – **Susceptibilities** – defines any susceptibilities the plant has. Select from a list.

Column BQ – **Adverse Factors** – defines any adverse factors relating to the plant. Select from a list.

Miscellaneous

Column BR – **Description Text** – describes the plant with information not included in the other columns.

Column BS – **Description 2** – additional or alternative text to describe the plant.

Column BT – **Nursery ID 1** – defines the nursery ID or code used to identify the plant.

Column BU – **Container Size** – defines the container size for the plant. Select from a list.

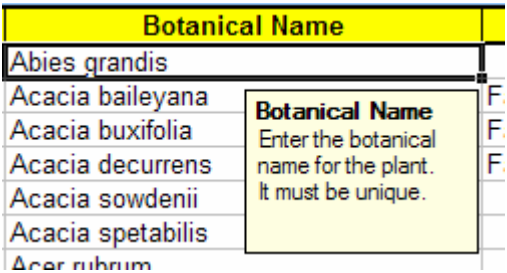
Costing

Column BV – **Price 1** – defines the main price of the plant.

Column BW – **Price 2** – defines an alternative price of the plant.

Column BX – **Price 3** – defines a second alternative price of the plant.

If you click in a cell a small box will appear showing the column heading and a short description of what the data in the cell is used for. An example is shown below.



Some column constraints of the database you should be aware of are:

1. You must not add, delete or move columns within columns A-K.
2. You must not edit in any way the headings in row 29 for columns A-K.
3. The plant data must start in column L and continue in higher lettered columns, ie, columns M, N, O, etc.

Some column freedoms of the database you should be aware of are:

1. In the plant data area of the worksheet, ie, columns L and higher, you can add columns, delete columns and move columns.
2. Data in the columns can be sorted in any order you require, eg, it can be sorted by botanical name, by type, etc. Appendix 4 – Sorting the Plant Database in Excel on page 153 explains how to do this.

Appendix 2 – Editing the Plant Database in Excel

The plant database can be edited from within LANDWorksCAD or directly in Microsoft Excel. This appendix explains how to edit the database directly in Excel.

The explanations apply to the concept, existing and proposed plants.

The explanations assume basic knowledge of Excel.

Editing Existing Plant Data

Editing the database is as simple as opening it in Excel and entering the appropriate data. Each row pertains to a particular plant. Save the file and the next time you open LANDWorksCAD or reload the database the new data will be available.

For the plant data, ie, columns L–BX, simply type in the relevant data or select it from the available drop down lists.

For the CAD data, ie, columns B–H, you must type in the path and file name of the figure/image to be used to represent the plants.

If the file is saved in a folder below the LANDWorksCAD folder, the path can start with the folder directly below the LANDWorksCAD folder, eg, "Landscape-Symbols\Plants\ …….".

If the file is not saved in a folder below the LANDWorksCAD folder, the path must start from the root folder, eg, "C:\Acme Landscaping\Plant Library\ ……".

***Note**: The file name must include its extension, ie, ".cad", etc.*

Adding a Plant

To add a new plant, simply insert a new row and enter the appropriate data.

***Tip**: To insert a new row in Excel, select any cell in the row below where you want the new row and then select **Insert → Rows** from the menu.*

Deleting a Plant

To delete an existing plant, simply delete the row.

***Tip**: To delete a row in Excel, click on the row number (the entire row will be selected) and then select **Edit → Delete** from the menu.*

Re-Arranging/Moving Plants

Any rows from 32 on can be re-arranged or moved to suit your requirements.

***Tip**: When re-arranging/moving plants ensure the entire row is selected, not just the visible cells.*

***Tip**: The basic steps to move a plant are: 1) insert a new row where you want to move the plant and 2) cut and paste the existing row to the new position. For more details, please refer to the Excel Help system.*

Adding a New Data Item (Column)

To add a new item of data for the plants, simply insert a new column, give it a heading in row 29 and then enter the appropriate data for each plant.

***Tip**: To insert a new column in Excel, click anywhere in the column to the right of where you want the new column and then select **Insert → Columns** from the menu.*

Deleting an Existing Data Item (Column)

To delete an existing data item, simply delete the column.

***Tip**: To delete a column in Excel, click on the column letter (the entire column will be selected) and then select **Edit → Delete** from the menu.*

Re-arranging/Moving Data Items (Columns)

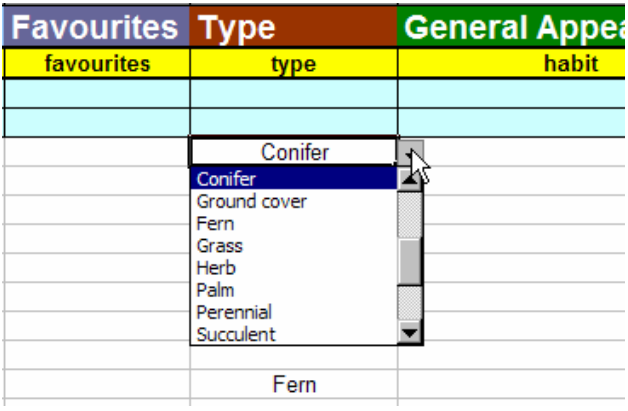
Any data items (columns), except those in the CAD data section (columns A – K) can be re-arranged or moved to suit your requirements.

***Tip**: When re-arranging/moving data items ensure the entire column is selected, not just the visible cells.*

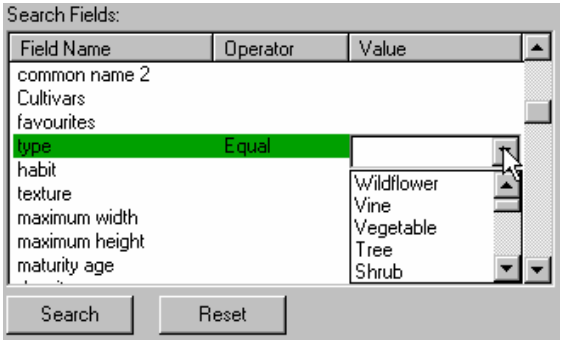
***Tip**: The basic steps to move a column are: 1) insert a new column where you want to move the data item and 2) cut and paste the existing column to the new position. For more details, please refer to the Excel Help system.*

Appendix 3 – Working with the Selection Data

When working on your LANDWorksCAD plant database many columns let you select from a drop-down list of data. An example of this is shown below.



This list is also used when searching for plants in the **Insert Plant** commands in LANDWorksCAD, as shown below.



This appendix explains how to work with these lists of selection data.

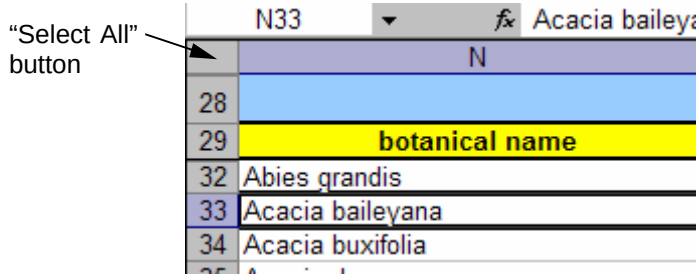
***Note**: Everything in this appendix is specific to Excel. The selection data lists cannot be edited in LANDWorksCAD.*

Displaying the Hidden Selection Data

The selection data is contained in rows 2-27. Rows 1-27, 30 and 31 are initially hidden in the supplied database. This is to prevent users from accidentally, or intentionally, editing the data contained in these rows before they really know what the data is for. ☺ These rows can, however, be displayed without affecting the functionality of the database in any way.

To display these hidden rows, do the following:

1. Open the LandworksPlantDatabase.xls file.
2. Select all rows by clicking on the "**Select All**" button as shown below:

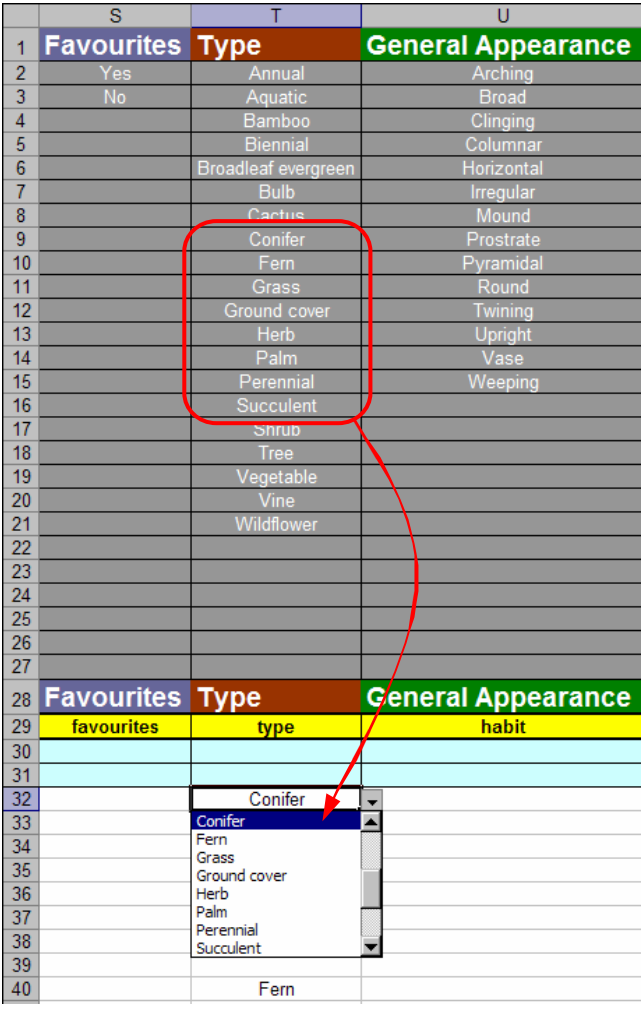


3. The entire worksheet will be highlighted – all cells will have a grey background.
4. Select **Format → Row → Unhide** from the menu.
5. Rows 1-31 will be displayed (you may have to scroll up to see them)
6. To remove the highlighting click in any cell.

Note: *Saving the database with these rows displayed has no affect on the functionality of the database.*

Note: The formatting of these rows is white text with a grey background, but this is for identification only; the colours can be changed to suit you.

As an example of how this selection data works, scroll across to the **Type** column (**T**), click in the cell in row **32** and then click on the small "down arrow" that appears to the right of the cell, as shown below. The selection data in the list that appears is obtained from rows 2-21 in that column. This is the way it works for all columns; the data is obtained from within rows 2-27 of the column selected.


S
T
U
Favourites
Type
General Appearance
Yes
No
Annual
Aquatic
Bamboo
Biennial
Broadleaf evergreen
Bulb
Cactus
Conifer
Fern
Grass
Ground cover
Herb
Palm
Perennial
Succulent
Shrub
Tree
Vegetable
Vine
Wildflower
Arching
Broad
Clinging
Columnar
Horizontal
Irregular
Mound
Prostrate
Pyramidal
Round
Twining
Upright
Vase
Weeping
Favourites
Type
General Appearance
favourites
type
habit
Conifer
Conifer
Fern
Grass
Ground cover
Herb
Palm
Perennial
Succulent
Fern

Editing the Existing Selection Data

Changing the Data

You can change the selection data by editing the existing text in the cells and/or adding new data to the empty cells. To do this, simply click in the cell and type in what you want.

LANDWorksCAD does not sort the data in any way, so if you want it listed alphabetically you must do it yourself by re-arranging the cells.

When you have finished editing your selection data, the edited data is immediately available in the drop-down lists within Excel.

***Note**: The drop-down lists in LANDWorksCAD will not be updated until you have saved your database and then either restarted LANDWorksCAD or reloaded the database.*

When you have finished editing your selection data you don't have to hide the rows again. They can be left unhidden and LANDWorksCAD will still read the data correctly.

Please note the following very important points about the selection data lists:

1. The data can only reside in rows 2-27 and these row numbers are fixed
2. You **MUST NOT** insert more rows above row 28, the section headings. If you do, the "**Insert Plant**" commands in LANDWorksCAD will not work properly. For now, this means you are limited to a maximum of 26 items in any list, although this may change in the future.

After editing the selection data, don't forget to save your database.

Expanding the Data

If you have not expanded the selection data, ie, you have only edited the existing text and/or re-arranged the existing cells, then you can save your database and the new selection data will work fine in LANDWorksCAD. However, if you have expanded the selection data by entering text in the empty cells, the selection data range must be updated to include these new cells. The following example explains how to do this.

This example uses the **Type** column (**T**), but the concept applies equally to all columns that have selection data lists.

In this example, two new entries have been added to the Type list: "Climber/Creeper" and "Fruit Tree".

The standard selection data for column T is shown on the left below and includes rows 2 – 21. The new selection data is shown on the right and includes rows 2 – 23. It includes the two new entries and the data has been re-arranged alphabetically.

	T
1	Type
2	Annual
3	Aquatic
4	Bamboo
5	Biennial
6	Broadleaf evergreen
7	Bulb
8	Cactus
9	Conifer
10	Fern
11	Grass
12	Ground cover
13	Herb
14	Palm
15	Perennial
16	Succulent
17	Shrub
18	Tree
19	Vegetable
20	Vine
21	Wildflower
22	
23	
24	
25	
26	
27	

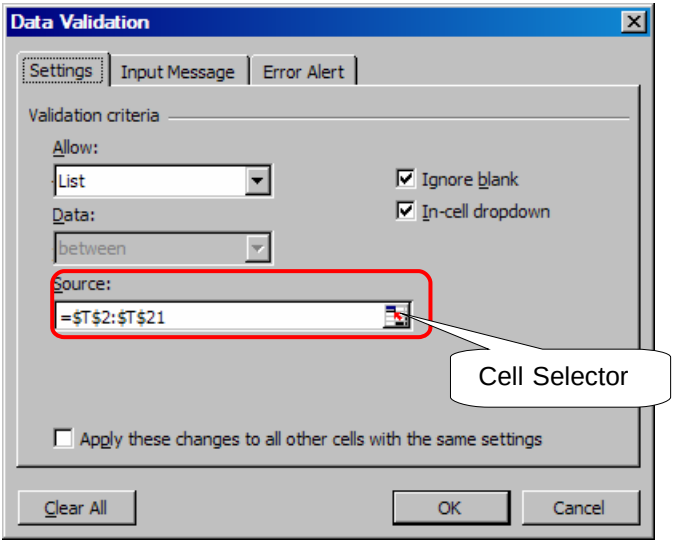
	T
1	Type
2	Annual
3	Aquatic
4	Bamboo
5	Biennial
6	Broadleaf evergreen
7	Bulb
8	Cactus
9	Climber/Creeper
10	Conifer
11	Fern
12	Fruit Tree
13	Grass
14	Ground cover
15	Herb
16	Palm
17	Perennial
18	Succulent
19	Shrub
20	Tree
21	Vegetable
22	Vine
23	Wildflower
24	
25	
26	
27	

New

New

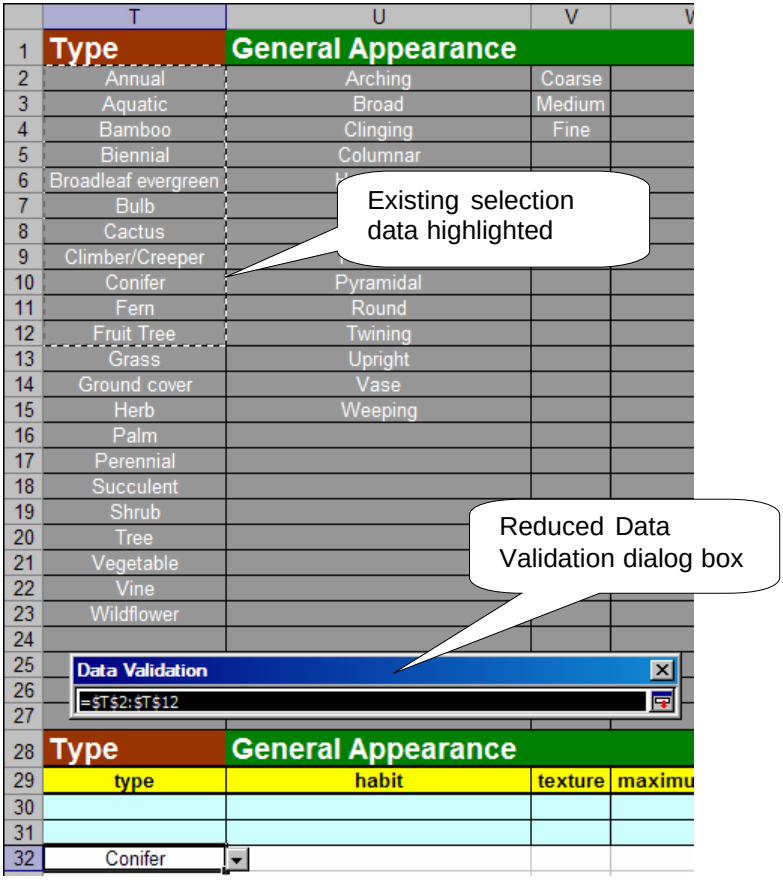
The following steps were used to update the selection data range for this example:

1. Click in the cell in row 32 for column T.
2. Select **Data → Validation** from the menu.
3. Select the **Settings** tab on the "Data Validation" dialog box that appears, as shown below.



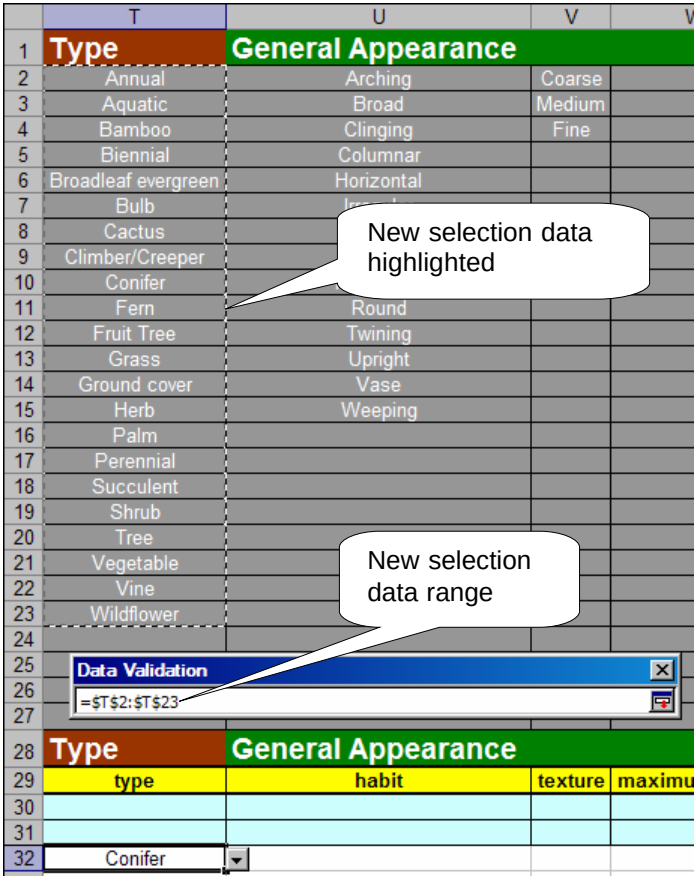
4. The "**Allow**" box is set to allow a "list" to be selected from.
5. The "**Source**" box, as indicated above, shows the cells that contain the list, ie, the selection data. In this example this is cells T2 – T21. (Ignore the $ signs; they are inserted automatically by Excel)
6. Click on the "**Cell Selector**" as shown above.
7. The "Data Validation" dialog box will be reduced in size and the existing selection data highlighted, as shown below.

***Note**: The "existing" selection data range may alter from the original depending on how you edited the data.*

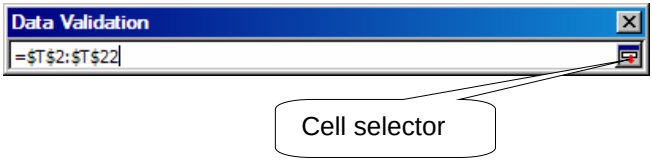


	T	U	V
1	Type	General Appearance	
2	Annual	Arching	Coarse
3	Aquatic	Broad	Medium
4	Bamboo	Clinging	Fine
5	Biennial	Columnar	
6	Broadleaf evergreen		
7	Bulb		
8	Cactus		
9	Climber/Creeper		
10	Conifer	Pyramidal	
11	Fern	Round	
12	Fruit Tree	Twining	
13	Grass	Upright	
14	Ground cover	Vase	
15	Herb	Weeping	
16	Palm		
17	Perennial		
18	Succulent		
19	Shrub		
20	Tree		
21	Vegetable		
22	Vine		
23	Wildflower		
24			
25			
26			
27			
28	Type	General Appearance	
29	type	habit	texture
30			
31			
32	Conifer		

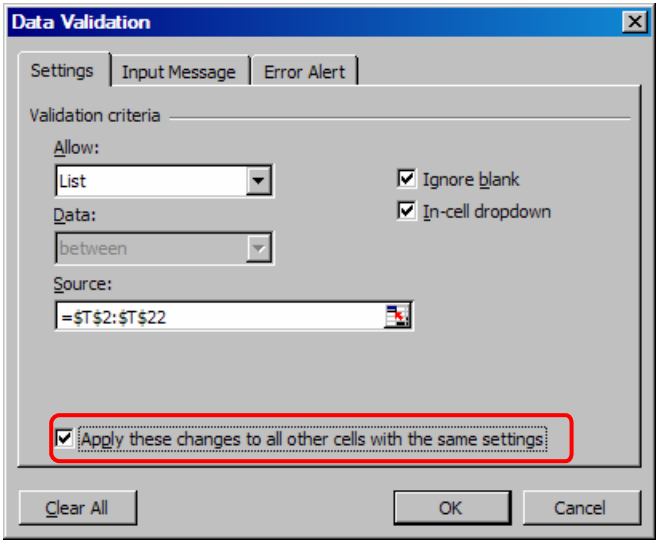
8. Highlight the new selection data by dragging your cursor over the cells until the flashing highlight rectangle includes the new data, as shown below. The cell numbers in the reduced Data Validation dialog box will adjust accordingly.



9. Click on the "**Cell Selector**" again, as shown below. This will enlarge the "Data Validation" dialog box again.



10. Tick the box indicated below to ensure this new selection data applies to all the other cells in the column. The other cells in column T are highlighted.



11. Click OK to finish.

All cells in column T now list the two new entries in their selection data list.

Assigning Selection Data to New Columns

If you add a new column to your database, either of two things will happen to the selection data for that column:

1. There will be no selection data, ie, rows 2–27 for that column will be empty, so the selection data list will be empty, or
2. The new column will have inherited the selection data from an adjacent column so the selection data list will be incorrect because it is pointing to the wrong column.

In both cases, the correct data will have to be entered into the cells and then the selection data lists updated to look at it, using the same technique described in the previous section, Expanding the Data.

***Note**: The instructions in this section do not cover every function of Data Validation within Excel. For more details refer to the Excel Help system or call the CAD International Support line.*

Removing the Selection Data

There may be cases where you do not want the data for a particular column to be restricted to a pre-defined list; you want to be able to enter any data into the cells. To do this you must remove the “list” restriction of Excel’s Data Validation function that is used by LANDWorksCAD.

This is done as follows:

1. Select the cells you want to unrestrict. This may be a small selection of cells or the entire column.
2. Select **Data --> Validation** from the menu.
3. Depending on the cells selected, you may get a message that some of the cells do not have Data Validation settings & you'll be asked if you want to extend the settings to these cells - click “**Yes**”.
4. In the "**Settings**" tab, the "**Allow**" field will show the word “**List**”. Change this to read “**Any value**” & then click **OK**.
5. You can now enter any text you want.
6. Save the database & restart LANDWorksCAD or reload the database for this new setting to be available.

Appendix 4 – Sorting the Plant Database in Excel

The plant database supplied with LANDWorksCAD has the plants sorted alphabetically by their Botanical name, but this can be changed; the plants can be sorted by any column you want.

However, the database can only be sorted in Excel; it cannot be sorted in LANDWorksCAD. LANDWorksCAD simply displays the plants in whatever order they are in Excel.

The secret to sorting the plant database is to NOT select the entire spreadsheet, as is normally done when sorting a spreadsheet. This is because rows 1–31 should not be included in any sorting; they must remain where they are for the spreadsheet to work correctly with LANDWorksCAD.

The steps to sorting the database are as follows:

1. Determine by what column you want the data sorted and note the column letter, eg, to sort by **Botanical Name** it is column **N**, to sort by **Type** it is column **T**, etc.
2. Scroll up until you can see row 32. Your screen should look something like the image below.

	K	L	M	N	O
28		Names			
29	number of 2d figures	abbreviation	abbreviation-2	botanical name	family
32	1	Ab gr		Abies grandis	
33	1	Ac ba		Acacia baileyana	Fabaceae, sub fam. Mimosoide
34	1	Ac bu		Acacia buxifolia	Fabaceae, sub fam. Mimosoide
35	1	Ac de		Acacia decurrens	Fabaceae, sub fam. Mimosoide
36	1	Ac sa		Acacia sowdenii	
37	1	Ac sp		Acacia spetabilis	
38	1	Ac re		Acer rubrum	
39	1	Ac he		Actinotus helianthi	Apiaceae
40	1	Ad ra		Adiantum hispidulum	Adiantaceae
41	1	Ae pa		Aesculus pavia	
42	1	Ag pr		Agapanthus proecox	
43	1	Al to		Allocasuarina torulosa	Casuarinaceae
44	1	Al gl		Alnus glutinosa	
45	1	Am gr		Amelanchia grandiflora	
46	1	An co		Angophora costata	
47	1	An ma		Anigozanthos manglesii	Haemodoraceae

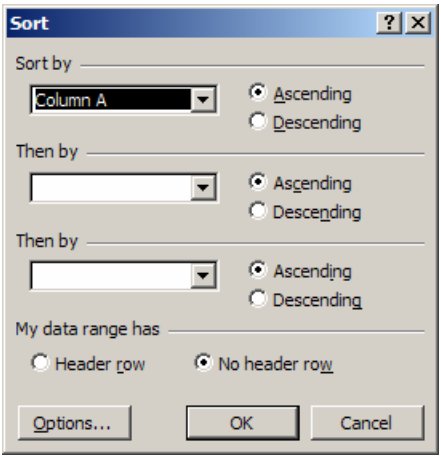
3. Click on row 32's identifying number. This will highlight row 32 as shown below.

	K	L	M	N	O
28		Names			
29	number of 2d figures	abbreviation	abbreviation-2	botanical name	family
32	1	Ab gr		Abies grandis	
33	1	Ac ba		Acacia baileyana	Fabaceae, sub fam. Mimosoide
34	1	Ac bu		Acacia buxifolia	Fabaceae, sub fam. Mimosoide
35	1	Ac de		Acacia decurrens	Fabaceae, sub fam. Mimosoide
36	1	Ac sa		Acacia sowdenii	
37	1	Ac sp		Acacia spetabilis	
38	1	Ac re		Acer rubrum	
39	1	Ac he		Actinotus helianthi	Apiaceae
40	1	Ad ra		Adiantum hispidulum	Adiantaceae
41	1	Ae pa		Aesculus pavia	
42	1	Ag pr		Agapanthus proecox	
43	1	Al to		Allocasuarina torulosa	Casuarinaceae
44	1	Al gl		Alnus glutinosa	
45	1	Am gr		Amelanchia grandiflora	
46	1	An co		Angophora costata	
47	1	An ma		Anigozanthos manglesii	Haemodoraceae

4. Scroll down the screen until you can see the last row of plant data.
5. Hold down the **Shift** key and click the last row's identifying number.
6. This will highlight all the rows from 32 to the last row of data, as shown below. Here the last row of data is 266.

	K	L	M	N	O
28		Names			
29	number of 2d figures	abbreviation	abbreviation-2	botanical name	family
254	1	To bo		Toxus boccata	
255	1	Tr sp		Tricocereous spachianus	
256	1	Tr pu		Tricocereus purpur	
257	1	Tr co		Tristania conferta	
258	1	Tr co		Tristania conferto	
259	1	Ts he		Tsuca heterophylia	
260	1	Ts si		Tsuga sieboldii	
261	1	Ul pr		Ulmus procera	Ulmaceae
262	1	Ul sa		Ulmus sarniensis	
263	1	Vi he		Viola hederacea	
264	1	Wis fl		Wisteria florabunda	
265	1	Wo bi		Wodyetia bifurcata	
266	1	Xa au		Xanthorrhoea australis	
267					
268					
269					

7. Select **Data → Sort** from the menu. The following dialog box will be displayed.



8. Click in the first “Sort by” field and select the column you want to sort the data by, eg, column N = Botanical Name, column T = Type, etc.
9. Make sure the “Ascending” option is selected, as shown above. So the data is sorted from A to Z.
10. Make sure the “No header row” option is selected.
11. Click the **OK** button.
12. The plants will now be sorted in alphabetical order by the column you selected. You may have to scroll back up to see the results.
13. Save your database. The next time you start LANDWorksCAD or reload the database the plants will be listed in this order.
14. If you add more plants to the database it’s best to insert them so the plants remain in alphabetical order. If they get mixed up again, simply repeat the steps listed here to re-sort them.

***Note**: The dialog box shown above gives you the ability to sort the data by up to three columns; however this functionality is not covered in this manual.*