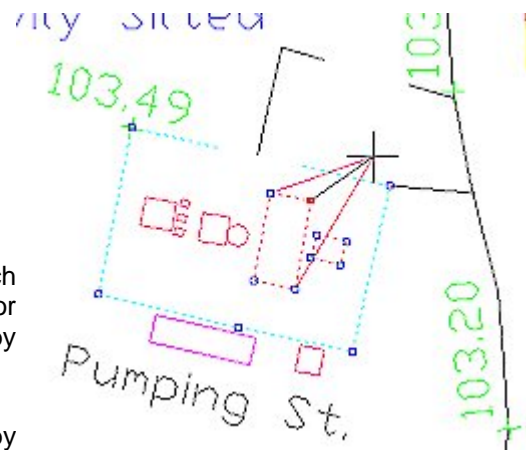


AutoCAD

By Chris Skellern

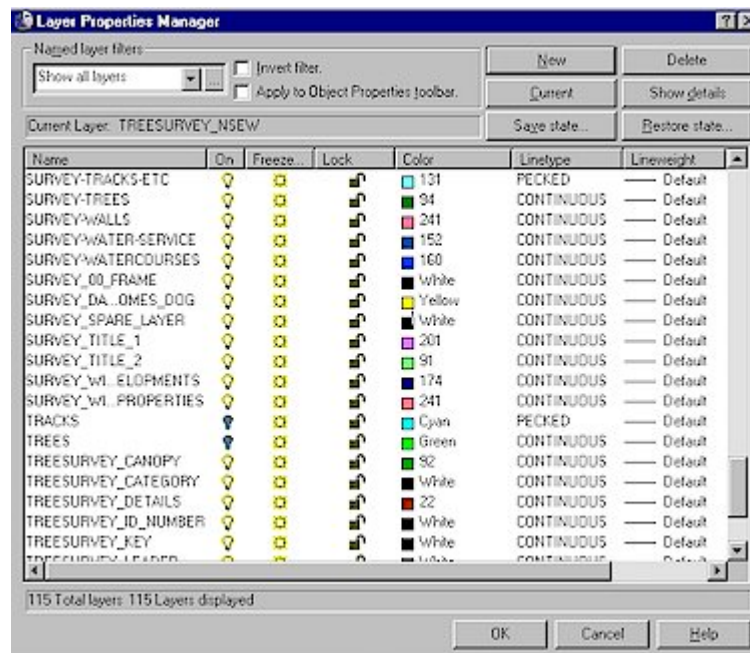
AutoCAD is a high quality, reliable program which is probably the industry standard program for plotting land surveys in the UK. It is produced by Autodesk which is based in the USA.

An AutoCAD program creates a drawing by creating objects (or entities) which are items such as a line, circle, line of text, bitmap image etc. Each object can be 'clicked on' with the mouse and its position, size or properties easily adjusted. A typical program may contain hundreds of objects.



The above picture shows a small section of an AutoCAD drawing. I have selected three objects (they are all rectangles and show as a pecked line with their 'grip' control boxes visible). I have picked and moved one of the grip boxes with the black mouse cross-hair.

An AutoCAD drawing also contains layers which you create yourself. As each object is drawn it is assigned to a particular layer. The layers can be controlled in a number of ways and is a powerful function of a CAD program. In a typical land survey drawing, the building lines, road lines, vegetation, services, contours etc are all plotted onto separate layers. Each layer has a meaningful name to describe what it contains. Each layer can be switched off or on, allowing you to hide the objects it contains. You could think of each layer as being a separate drawing which overlay each other to form the actual drawing. You can also modify all items within a layer by adjusting the layers colour, linetype, etc (see picture).



There are two main forms of the program available being 'AutoCAD' and 'AutoCAD LT' (other specialist versions exist for electrical and mechanical systems). Its file formats, 'DWG' and 'DXF' have become the default standard for all CAD packages (DXF is an ASCII based

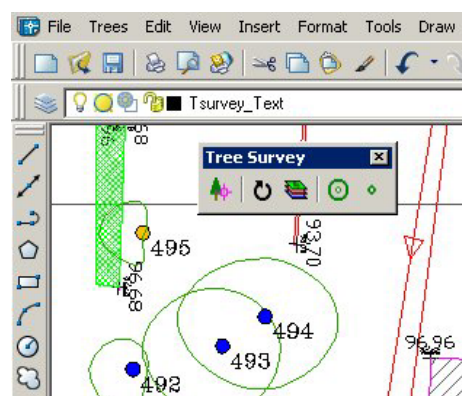
file format created to enable it to be easily loaded by other CAD programs). The LT version is much the same as the full version of AutoCAD but with a few features removed. Before I discuss the differences further, first a quick look at its history.

AutoCAD version 1.0 was born around 1982 where it was supplied on 5.25" floppy disks and ran under DOS. The program evolved for the next 10 years and became Windows 3.1 compatible in 1993. In 1997 AutoCAD version R14 was released which was compatible with Windows 95. Release 14 was a big improvement with many new features including the ARX programming language. This version is still used by many today. In 1997 a cut-down version of the program was born called 'AutoCAD LT'. This was released to compete with the other CAD programs being produced at the time and which cost a lot, lot less than the full version of AutoCAD. AutoCAD 2000 introduced more improvements and later the 2000i version was released (the 'i' standing for 'Internet'). An LT version was now created alongside each new release. The latest release is AutoCAD 2006 (as of March 2005).

The main differences between AutoCAD and the LT version is the removal of AutoLISP and the ActiveX Automation programming languages. These items allow you to program powerful commands and processes into AutoCAD and also enable its easy connection to other programs. For example you can create a LISP program to load a text file, process a list of data and plot items on to an AutoCAD drawing based upon the data contained within the list (it can make decisions). Or you can allow a batch processing program to remotely control AutoCAD and create drawings from a stored data list such as a tree survey schedule! These are very powerful functions as they can save a business many hours of tedious repetitive work and of course money! And this is one of the reasons why the LT version costs a few hundred pounds and the full version costs a few thousand! However, for the LT users, all is not completely lost as AutoDesk did leave the Script function in place. A Script file is simply a sequence of stored AutoCad drawing commands which can be automatically processed together. The script is stored as a file and can be loaded as and when required.

You can create your own toolbars and/or drop-down menu's to call up a particular script and process it with a click of the mouse. With a little clever programming it is also possible to create a batch processor, controlled by an external program, but using the script function; and indeed many third party software packages offer such options to the LT users.

This picture shows a custom menu installed on AutoCAD 2004 LT. It is simple, just consisting of five commands (*left to right: Plot a tree, undo, install layers, set circle snap, set point snap*). The 'plot tree' icon loads and runs a script file from the hard drive, which contains all the necessary drawing commands required to plot the tree (with its tag number, coloured category disk, canopy extents, etc). Of course, you first need to get the correct tree data into the script file and also tell AutoCAD exactly where the data must be plotted on the drawing!



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