Pedestrian Area Lighting
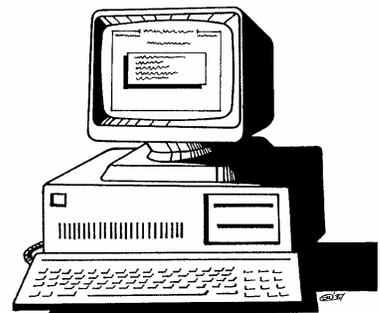
to

AS/NZS 1158.3.1:1999

PERFECT LITE

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DISCLAIMER OF WARRANTY

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TABLE OF CONTENTS

1.   INTRODUCTION

The **Pedestrian Area Lighting** software (Plepal) produces Spacing Tables which can be used as design aids in lighting of Category 'P' roads in Australia and New Zealand. Category 'P' was introduced in the revised Road Lighting Code **AS/NZS 1158.3.1:1999,** released in November 1999. This Code supercedes [in part] the AS1158.1:1986 and NZS 6701:1983 Codes. The Pedestrian Area Lighting software also supports several other elements referred to in the Code.

It is assumed that the user has basic knowledge of the operations of the PC and the Windows 95/98/NT/2000/XP operating system.

Before reading any further, briefly look through this manual and you will notice that screen snapshots have been used quite regularly. This has been done to make it easier for you to equate the manual with the operation of the software. The example used in the snapshots utilizes the sample photometric data supplied in the file named   **Testfile.cie**.

2.   INSTALLING THE SOFTWARE

The software is provided in either of two forms depending on how it was purchased (i.e. either as a stand alone version or as part of the main Perfect Lite software package). In either case the Pedestrian Area Lighting software will be contained on a CD ROM and will require the following procedure to install the software correctly.

First load the CD ROM into your CD Drive and click on the **Start** button, Select **Run…** from the menu and type **x:\Plepal\setup.exe** (**x:** is the drive letter of your CD) into the Run dialog box and then click **OK**.
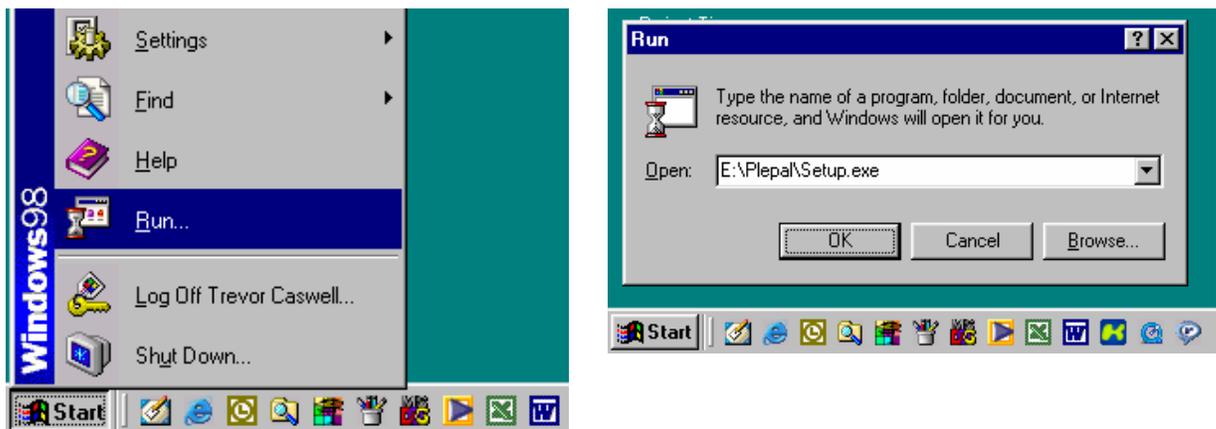
Follow the subsequent instructions on the screen to correctly install the Pedestrian Area Lighting software on your computer. Generally, it will only be necessary to click on the **Next** button several times to carry out the installation.

It is recommended you choose the default folder (**c:\Program Files\Perfect Lite**) in which to install the software. If you install it in another drive and/or folder then please make a note of the location below for future updates.

Pedestrian Area Lighting software installed in: …………………………………………………………..

3.   REMOVING THE SOFTWARE

Should the need arise you can uninstall the Pedestrian Area Lighting software by using the following procedure. Please note that it will only remove the components that were originally installed from the installation diskettes. The folder where the program is located will remain with any files that you may have subsequently created or copied into the folder.

First click on the **Start** button, select **Settings** and then **Control Panel** from the fly out menu.
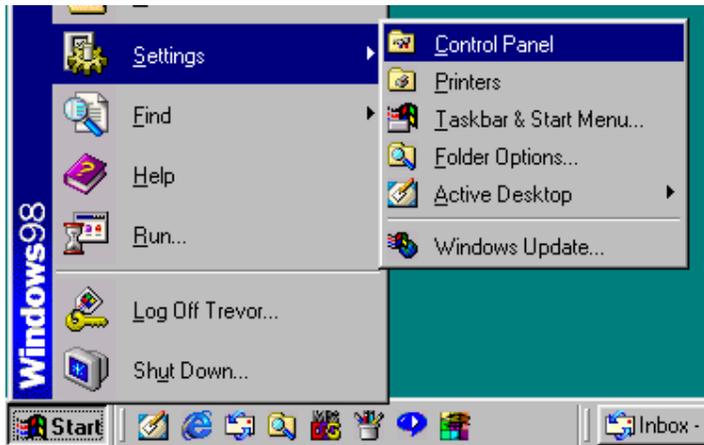
Then double click on the **Add/Remove Programs** icon.
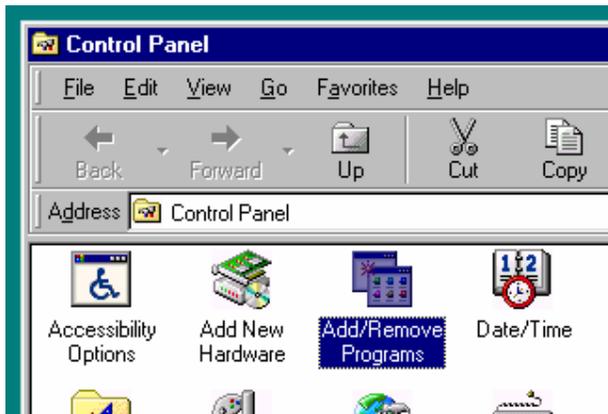
On the **Add/Remove Programs Properties** window scroll down to and highlight the **Perfect Lite – Pedestrian Area Lighting** item and click on the **Add/Remove…** button.
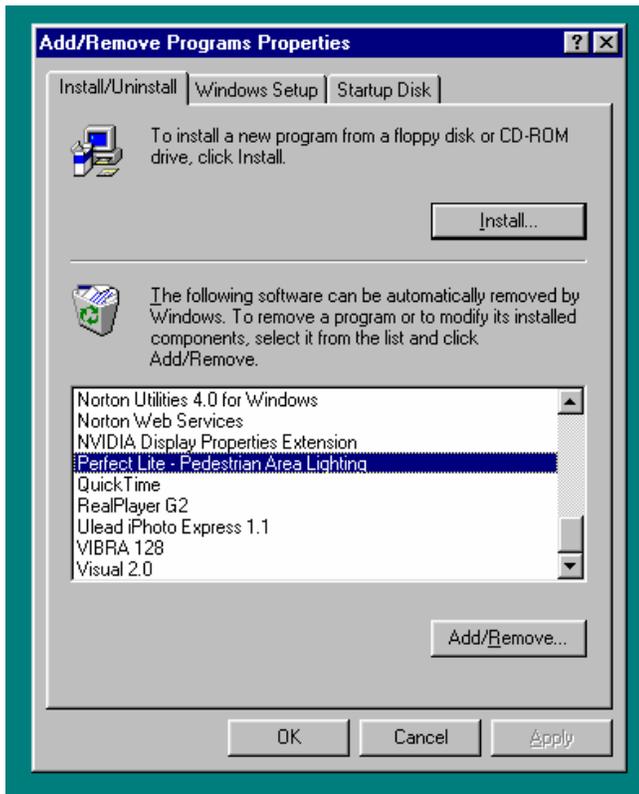
Then click on the **Yes** button on the **Confirm File Deletion** message box.
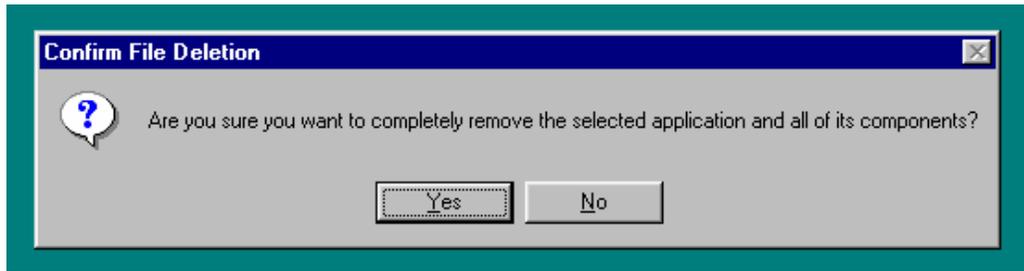
The various components of the software will then be removed and the screen as below will be display the progress. When complete click on the **OK** button.
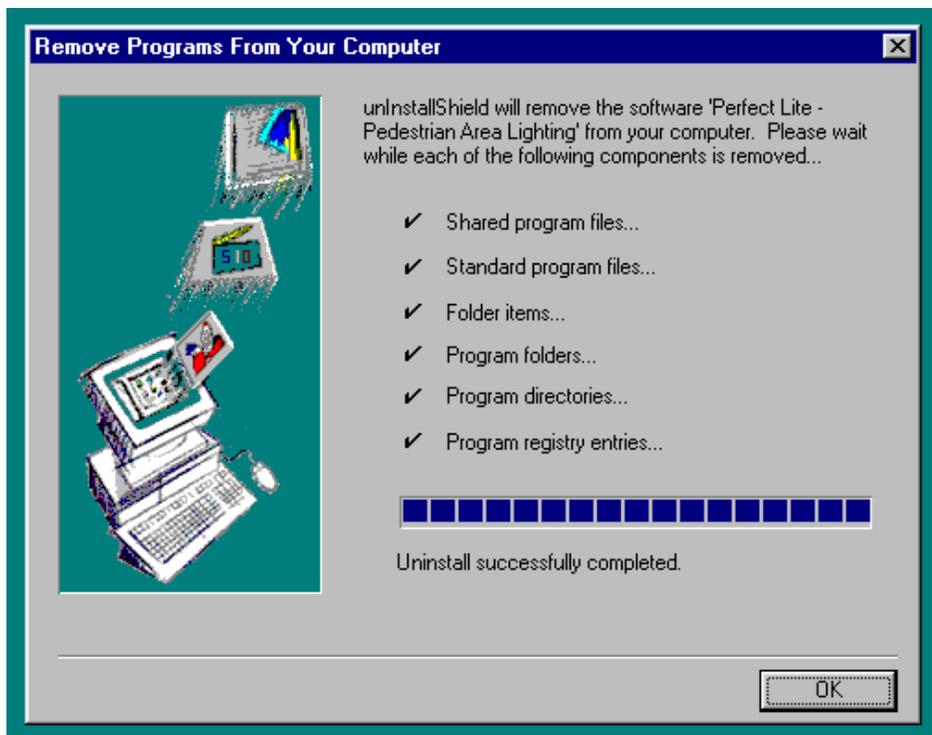
Next click on the **Cancel** button on the **Add/Remove Programs Properties** window and then close down the **Control Panel** group of icons.

4.   STARTING THE SOFTWARE

Click on the **Start** button and select **Programs** then **Perfect Lite** then **Pedestrian Area Lighting**.
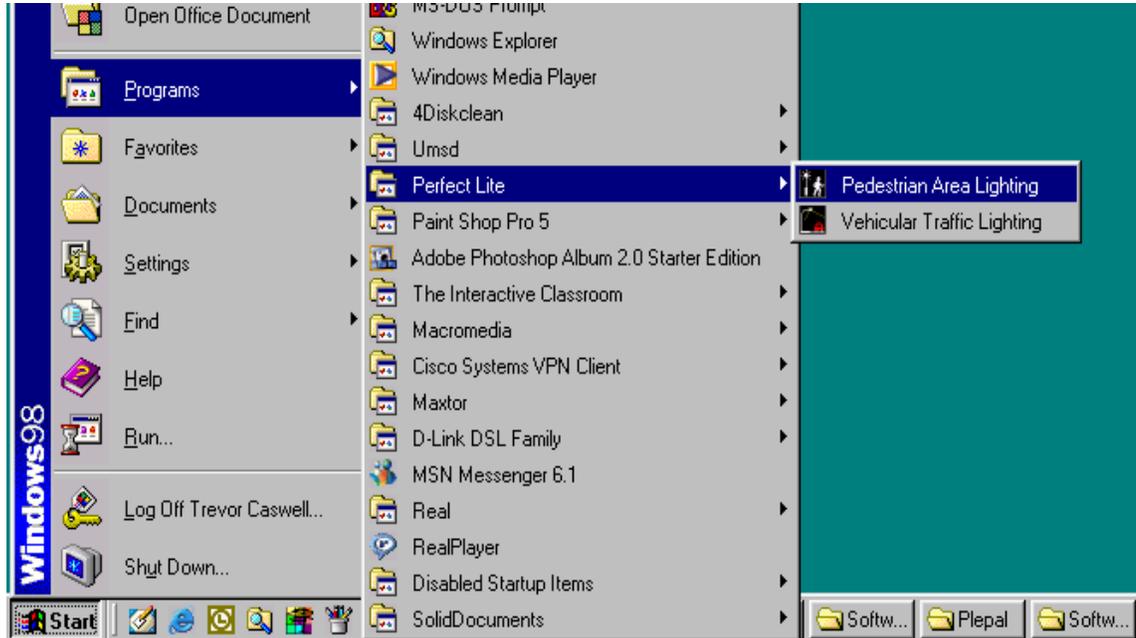
The window as shown below should be displayed from where you can continue to operate the software. If you are unfamiliar with the software then it is suggested that you undertake the 'brief tour of the software' as described in the following section.
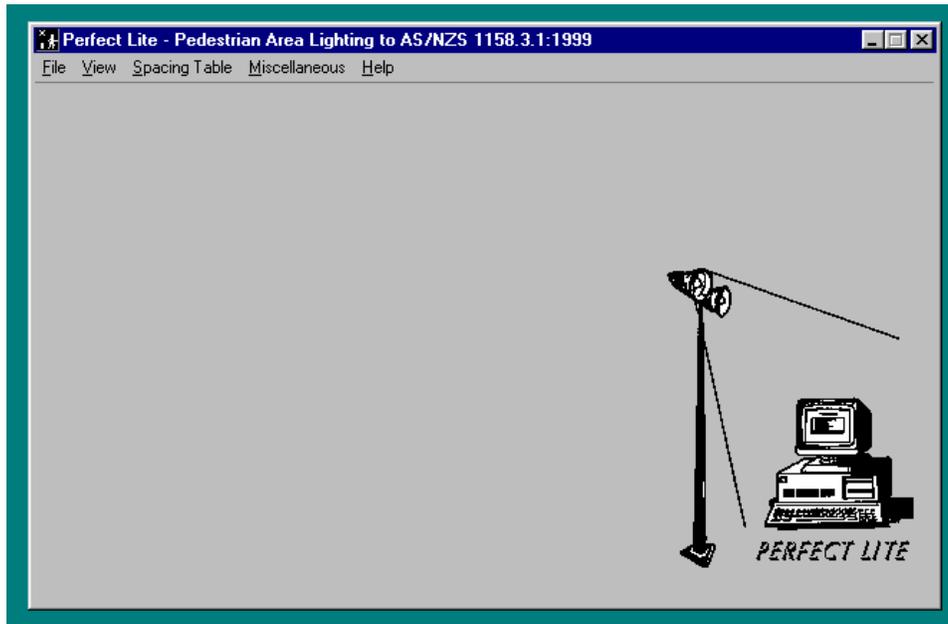
5.   BRIEF TOUR OF THE SOFTWARE

Before you produce a Spacing Table (or do anything else in the software) it is necessary to open up (or load) a photometric I-table. These I-tables would be stored on your computer or on a floppy diskette as a file supplied from a manufacturer or supplier. To get you up and running the software is supplied with a sample file (Testfile.cie) which corresponds to the one used in Appendix E of AS/NZS 1158.3.1. From the **File** menu click on **Open I-Table**.
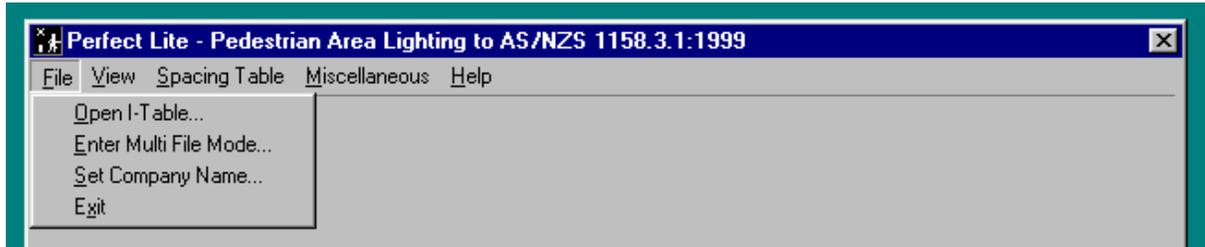
This will then display the screen where a further input is required.
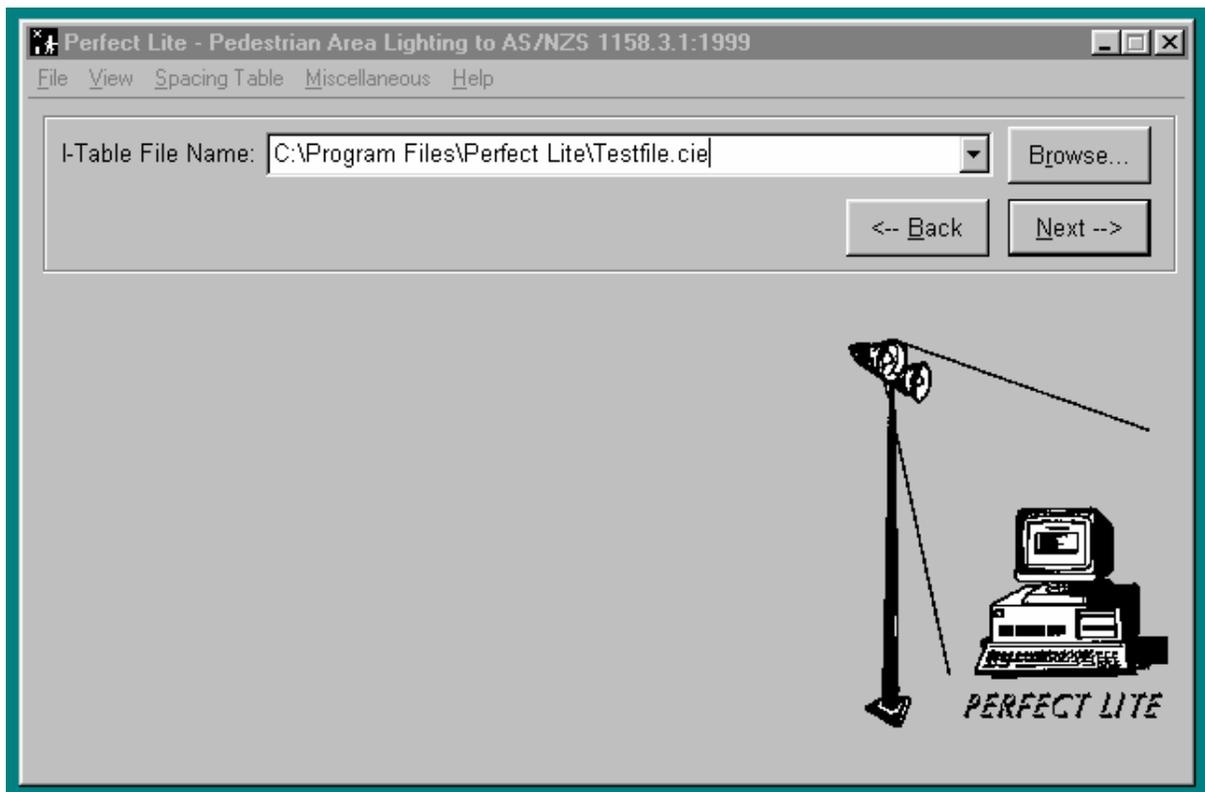
Each time you enter this screen (and most others in the program) the fields will be filled with the data last input. Should you wish to select a different file then either type the name directly into the **I-Table File Name** field, click on the combo box to select previous files or click on the **Browse** button to invoke the standard Windows File Open Dialog Box to select an appropriate file.
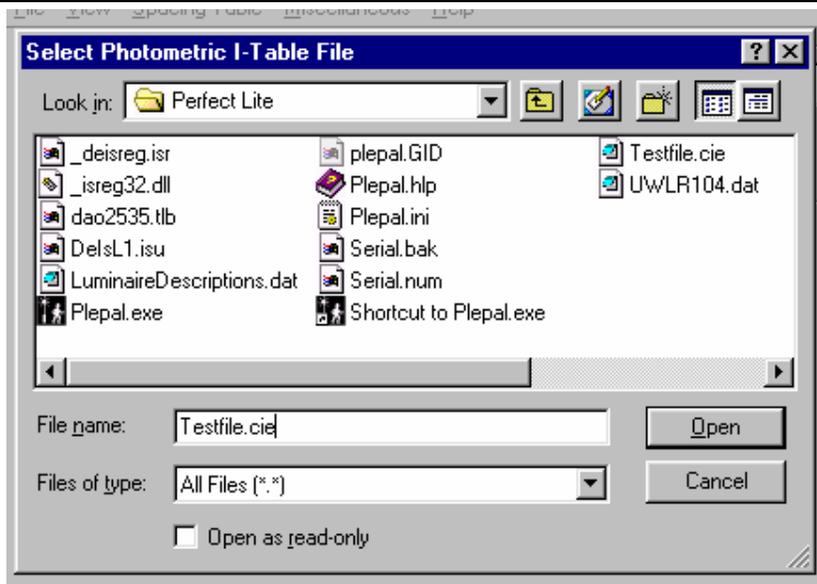
It should be noted that by default the dialog box will initially only display files with a "**cie**" file extension. If this is not the type of file you are looking for make a choice from the **Files of type** drop down list box. When the desired file is in the **File name** field click the **Open** button on the file dialog box to continue on with the software.

When all the information has been entered click on the **Next** button to continue on with the software. On the subsequent screen input descriptions of the luminaire being used, initial flux, maintenance factor etc..
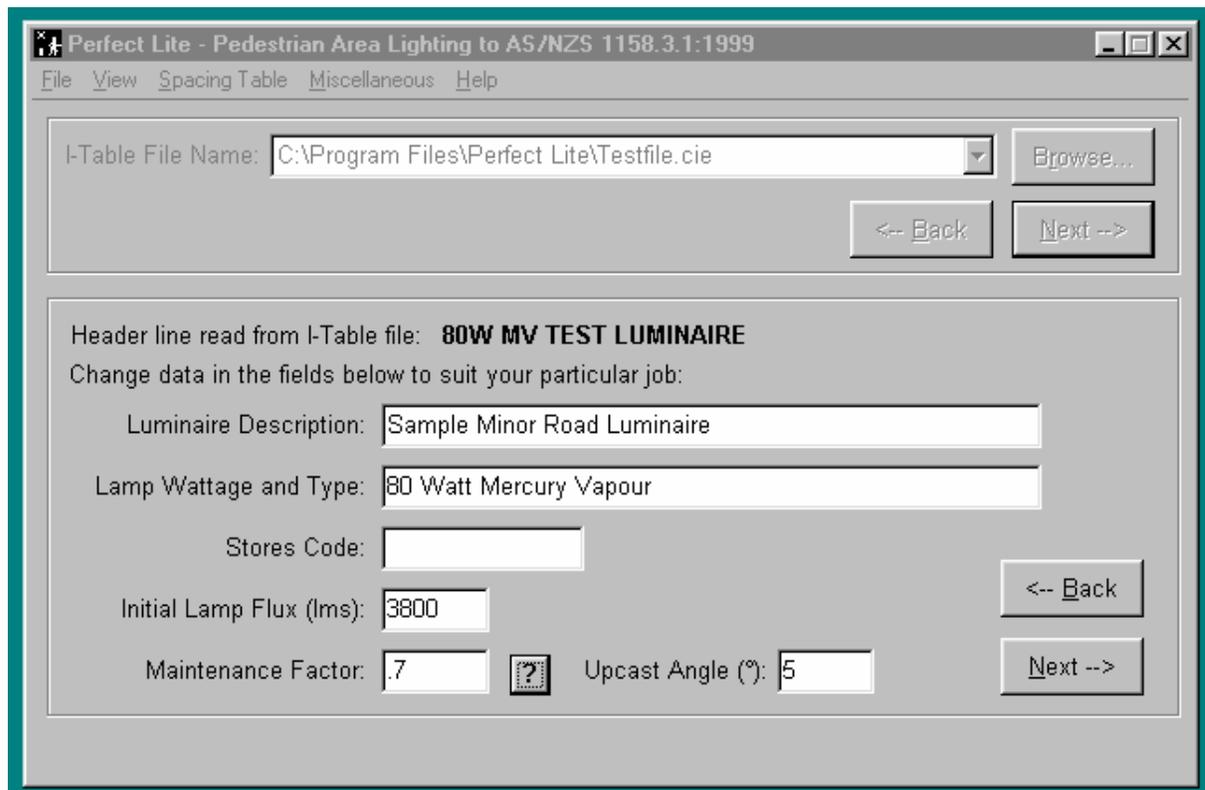
Inputs in the description fields are only necessary for identification of the luminaire/lamp and will be included on any output produced by the software. Once again when all the information has been entered click on the **Next** button.

You have now loaded the file (I-table) into the software and at this point you can view the photometric I-Table by selecting either of the top two items from the **View** menu.

But the main thing that we want to do is produce a Spacing Table. From the **Spacing Table** menu select **Local Roads…** .
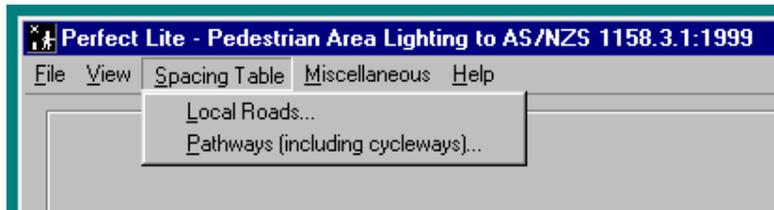
The screen will change to show several input fields to be filled with appropriate data relative to the Table you wish to produce. As this is the first time the software has been run it will have the default values as used in Appendix E of the AS/NZS 1158.3.1.

For this tutorial leave the fields as they are above.

Now might be a good time to talk about the **On-line Help** accessible in the software. If you are in doubt as to what details should be input into any field then simply put the cursor in that field (i.e. Left mouse click on the field) and press the **F1** key. A pop-up Help screen will appear giving you information on the contents of the field and limiting values that can be input. This help feature is

available for any item on the Menu, any button or screen displayed. To remove the Help screen click on the **X** in top right-hand corner of the screen.

Now, press the **Next** button to get the software to carry out the necessary calculations to determine the maximum spacing for the range of road widths and heights etc. selected. An example of the top part of the Table then displayed on the screen is shown below.

```
 ╔══ Perfect Lite - Pedestrian Area Lighting to AS/NZS 1158.3.1:1999 ═════════[X]╗
 ║                                                                             [▲]║
 ║              Pedestrian Area Lighting to AS/NZS 1158.3.1:1999                  ║
 ║              ***********************************************                   ║
 ║                                                                               ║
 ║                        Your company name goes here!                           ║
 ║                        ----------------------------                           ║
 ║                                                                               ║
 ║           Photometric File: C:\Program Files\Perfect Lite\Testfile.cie        ║
 ║                                                                               ║
 ║       Luminaire Description: Sample Minor Road Luminaire                       ║
 ║         Lamp Wattage & Type: 80 Watt Mercury Vapour                           ║
 ║            Initial Lamp Flux: 3800 lms                                         ║
 ║          Maintenance Factor: 0.7                                              ║
 ║                 Stores Code:                                                   ║
 ║                Upcast Angle: 5 degrees                                         ║
 ║                Arrangement: Single Side                                        ║
 ║             Offset Distance: 1/4 W                                            ║
 ║   Luminaire Classification: Type 4                                            ║
 ║   Upward Waste Light Ratio: 2.8 %                                            ║
 ║                                                                               ║
 ║           Lighting Category: P4 (Local Area Roads - Table 1.1)            [▼]  ║
 ║                                                                               ║
 ║ [ 24 pages if printed ]                        [  Print  ]      [  Close  ]    ║
 ╚═══════════════════════════════════════════════════════════════════════════════╝
```
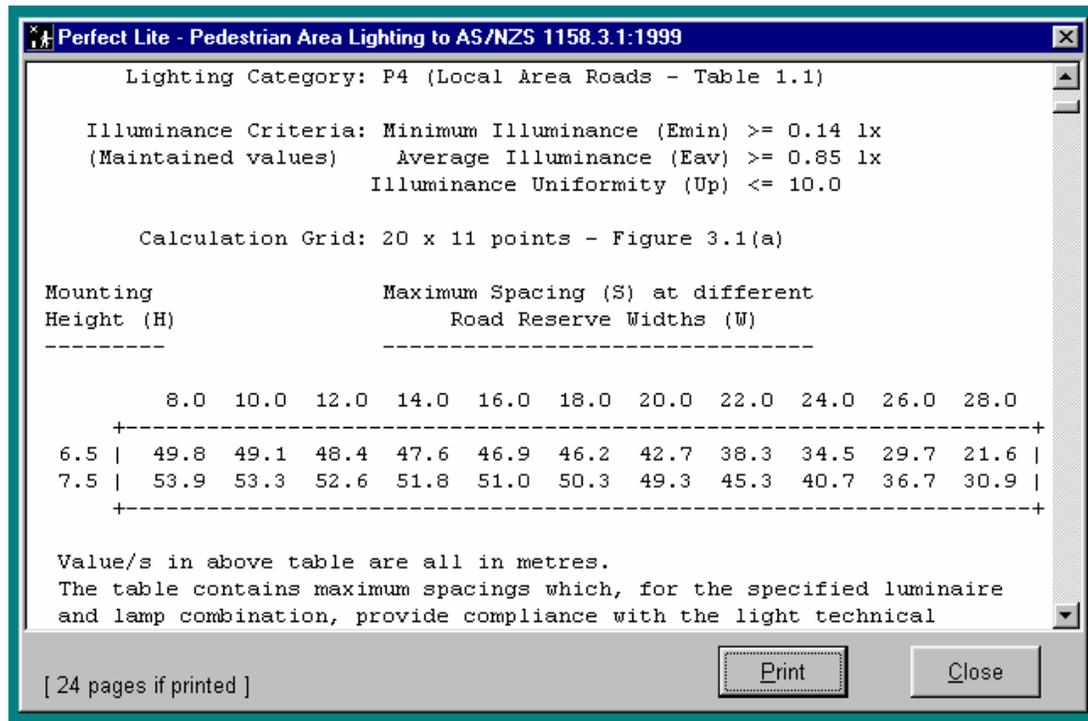
Use the scroll bar on the right side of the screen to move the display up to view more of the Table.

```
 ╔══ Perfect Lite - Pedestrian Area Lighting to AS/NZS 1158.3.1:1999 ═════════[X]╗
 ║           Lighting Category: P4 (Local Area Roads - Table 1.1)           [▲]   ║
 ║                                                                               ║
 ║       Illuminance Criteria: Minimum Illuminance (Emin) >= 0.14 lx             ║
 ║        (Maintained values)     Average Illuminance (Eav) >= 0.85 lx           ║
 ║                          Illuminance Uniformity (Up) <= 10.0                  ║
 ║                                                                               ║
 ║          Calculation Grid: 20 x 11 points - Figure 3.1(a)                     ║
 ║                                                                               ║
 ║   Mounting                  Maximum Spacing (S) at different                  ║
 ║   Height (H)                     Road Reserve Widths (W)                      ║
 ║   ---------                 ------------------------------                    ║
 ║                                                                               ║
 ║            8.0  10.0  12.0  14.0  16.0  18.0  20.0  22.0  24.0  26.0  28.0     ║
 ║         +--------------------------------------------------------------+      ║
 ║    6.5 |  49.8  49.1  48.4  47.6  46.9  46.2  42.7  38.3  34.5  29.7  21.6 |   ║
 ║    7.5 |  53.9  53.3  52.6  51.8  51.0  50.3  49.3  45.3  40.7  36.7  30.9 |   ║
 ║         +--------------------------------------------------------------+      ║
 ║                                                                               ║
 ║   Value/s in above table are all in metres.                                   ║
 ║   The table contains maximum spacings which, for the specified luminaire      ║
 ║   and lamp combination, provide compliance with the light technical      [▼]  ║
 ║                                                                               ║
 ║ [ 24 pages if printed ]                        [  Print  ]      [  Close  ]    ║
 ╚═══════════════════════════════════════════════════════════════════════════════╝
```

To print out the complete Table on your printer click on the **Print** button and the standard Windows print dialog box will be displayed.
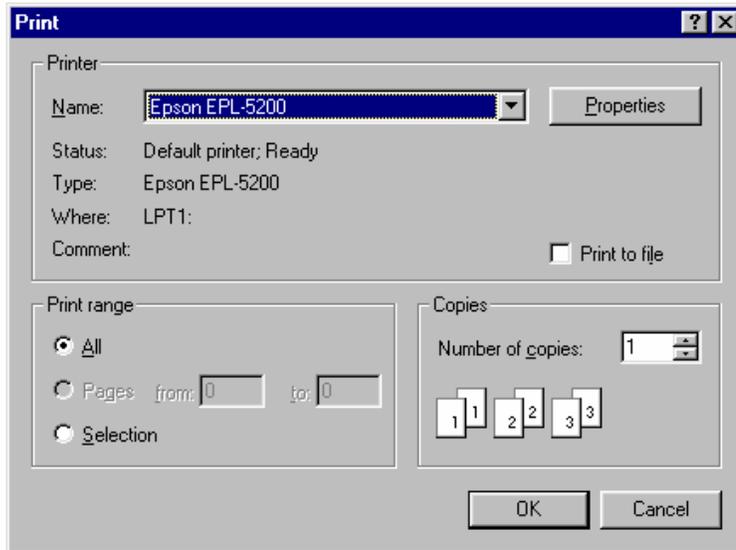
Select the appropriate printer and click on the **Ok** button to produce the printout.

Once the printout has been produced click on the **Close** button to remove the calculated results and return to the screen where you can change some or all of the values and produce another Table. If you don't want to produce another Table then click on the **Back** button. This will take you back to the point in the software where you can make another selection from the Main menu along the top of the window.

To close down the program altogether select from the **File** menu the **Exit** option or click on the **X** in the top right-hand corner of the software window.
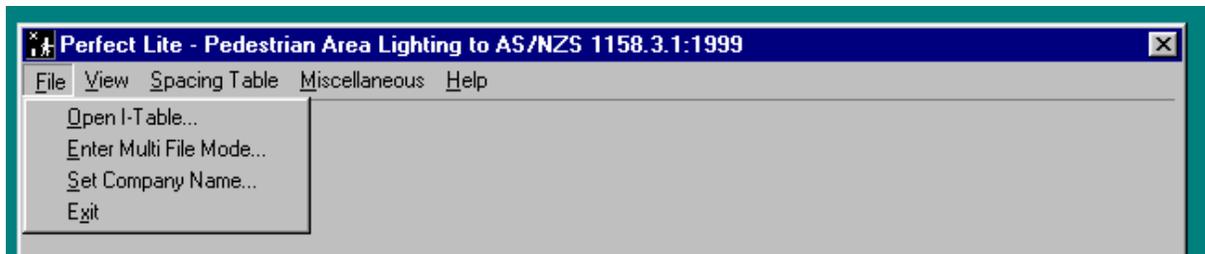
The remainder of the choices from the Main menu are self explanatory so I won't go into details of what they are about. If you have doubts then place the cursor over the required menu item and while holding down the left mouse button press the **F1** key and a pop-up Help screen will be displayed (eg. For the **Miscellaneous** menu see next page).

Miscellaneous Menu

Perfect Lite - Pedestrian Area Lighting to AS/NZS 1158.3.1

File   View   Spacing Table   Miscellaneous   Help

Upward Waste Light Ratio
Luminaire Classification
Vertical Illuminance in Front/Behind Luminaire

Upward Waste Light Ratio

This command will calculate and display the Upward Waste Light Ratio (UWLR) for the luminaire I-Table previously selected. Refer Table 2.5 of AS/NZS 1158.3.1:1999 for limiting values of UWLR for various classification types.

A detailed description of what UWLR is can be found in Clause 3.59 of AS/NZS 1158.0:1997.

Luminaire Classification

This command will determine (where possible) and display the Luminaire Classification for the luminaire I-Table previously selected. Refer Table 2.5 for details on the various classification types and uses with Category 'P' lighting.

Vertical Illuminance in Front/Behind Luminaire

This command will calculate and display, for the luminaire I-Table previously selected, the minimum distance in front and behind the luminaire that the Vertical Illuminance (Ev) falls to 1 lx. For more details refer to Clause 4.2.4 of AS/NZS 1158.3.1:1999.

6.   UPDATE HISTORY

The following is a brief list of all the major changes that have taken place over the years in the Pedestrian Area Lighting software (and prior to 1999 the Spacing Graph Generator software).

PEDESTRIAN AREA LIGHTING (PLEPAL)

VERSION – 2.06 (Released June 2004)
- "Multi File Mode" added which allows the automatic processing of up to 200 I-table files against a single set of layout parameters.
- Due to access problems associated with Network security the configuration files (Plepal-user.cfg) is now stored in the same folder as the program (NOT root folder of C drive).
- Warning message is given if the Printer used for output is changed from the default printer.
- Program version/Date stamp on bottom of printouts has been modified slightly.
- Contact email address on 'About' screen changed.

VERSION – 2.05 (Released May 2003)
- Released with Perfect Lite - Version 4.86a
- 'Save As…' button added to the screen where all results are viewed. This allows you to save or append the results to a text file rather than printing them out.
- Progress bar added to the Local Road and Pathways calculation screen.
- Allows Category P1 & P2 for Local road calculations (ignores Vertical illuminance).
- Now validates the Company name against the serial no. of the software.
- Contact details changed on the 'About' screen
- Calculation of Luminaire Classification corrected.
- Note about compliance after '5 November 2001' removed as no longer applicable.

VERSION – 2.04 (Released May 2001)
- Released with Perfect Lite - Version 4.84
- When 'tabbing' between input fields the whole field is highlighted so if you want to change the whole field you simply start typing the new value rather than first erasing all previous text. If you want to just change part of the field then press the <End> key and the highlight will disappear and you can move the cursor back to what you want to change data.
- Initialisation file (".ini") now referred to as a Configuration file (".cfg")

VERSION – 2.03b (Released October 2000)
- For Local Roads and an Opposite arrangement the program now allows the luminaire Offset to exceed half the Road Reserve width - this will simulate a Central arrangement.

VERSION – 2.03a (Released August 2000)
- The bug has been fixed where the program could not be re-started and restored to full size if closed down (or the PC shutdown) when it is minimised.

VERSION – 2.03 (Released May 2000)
- A field description on the Path Spacing Table input screen has been changed from 'Distance from Path Edge' to 'Offset from Path Edge' to remove confusion as to what the distance represents – see associated help screen.
- '&' character can be used in 'Offset Distance' and 'Offset from Path Edge' field to nominate the luminaire position as halfway across road reserve or path. Compliments the '*' character for one quarter across road reserve/path already built into the software.
- A history of revisions to the software added to the Contents item on the Help menu.
- When selecting 'Open an I-table' from the menu, the 'I-Table File Name' field has been changed to a drop down list box allowing the selection of the file name from one previously used

VERSION – 2.02 (Released February 2000)
- When selecting 'Open an I-table' from the menu, the first input screen has been changed to only select the required file name. On the subsequent screen where you would

normally input the description you now also input the flux, maintenance factor and upcast angle.

- Save the values entered for 'Luminaire Description', 'Lamp Wattage and Type' and 'Stores Code' against the file name so it will be automatically displayed next time the same luminaire is used.
- Check box added to allow all the LTP's at maximum spacings to be displayed on a separate page of the Spacing Table.
- Check box added to allow all the display of illuminance values at grid points of each maximum on separate pages of the Spacing Table.
- The location of the PLEPAL program window on the display screen will now be restored to where it was located last time the program closed down.
- Luminaire Classification changed to show if it complies after 5 November 2001.
- A 'Back' button has been added to some screens & position of the 'Next' and 'Back' buttons swapped around on other screens.

VERSION – 2.00 (Released November 1999)
- Released as a result of the revision to the Australian and New Zealand Public Lighting code AS/NZS 1158.3.1:1999 where lighting category 'P' was introduced.
- The program has been converted to a true **32 bit Windows Application** and the named changed to *Perfect Lite – Pedestrian Area Lighting* (PLEPAL.EXE). The previous MS-DOS versions (1.60, 1.59 etc.) was known as the *Spacing Graph Generator for Minor Roads* (PLESPACE.EXE).

SPACING GRAPH GENERATOR (PLESPACE)

VERSION - 1.63 (Released May 2001)

- Released with Perfect Lite Version 4.84
- Modified to do all printing through the Windows Print Manager
- Menu added at start of program to select printer for output
- With the introduction of AS/NZS 1158.3.1 this program has effectively been superseded by the Pedestrian Area Lighting software (PLEPAL) – refer separate manual detailing this software.

VERSION - 1.60 (Released June 1998)
- Released with Perfect Lite Version 4.82
- Allows the specification of a full Path for an I-Table file
- Standard DOS file dialogue used for file selection
- For Mode 3 – A maintenance factor of up to 10 can be used for R-Table '0' to calculate Lux rather than Cd/m^2

VERSION - 1.59 (Released April 1997)
- Released with Perfect Lite Version 4.81
- Road Width changed to go from 2m through to 40m
- Now uses version 1.60 of PPD.EXE for printer output

VERSION - 1.58
- Special issue for SEQEB/Energex in Queensland
- Rounding off of displayed results corrected
- 'Count' column removed
- 'Plot' & 'Redraw' option removed from graphics screen
- Error message given if 'PPD.EXE' file not found prior to printing
- Printer port displayed after printer description on opening screen
- Spacing range increased to 120m on graph/plot
- Road reserve width increased to 38m on graph/plot
- Default Upcast angle set to 5 degrees
- Reading default set up values from file 'PLESPACE.TBL' added
- Reading from file PLESPACE.LIN now fully supported
- Maximum spacing displayed to 1 decimal place
- 'Emax/Eav' displayed to 1 decimal place
- 'NO COMPLIANCE' added if Maximum spacing less than 0.005m

- <F5> key added to select from Parameter table file
- If PLE.HLP not found then PLESPACE.HLP used

VERSION - 1.57 (Released July 1995)
- Message window displayed if 0 cd/m2 found at V=0 in I-table - "/ADJ" command line option added to adjust values to 1 cd/m2
- "DESCRIPTION=" line added to 'PLESPACE.INI' file
- Disables MOUSE if file 'MOUSE.NO' found

VERSION - 1.56
- Text 'AS1158.1 -1986' added
- Display/Print out fixed so when NOT complying spacing 'Eav','Emin','Emax/Eav' shows last actual calculated values NOT last "complying" values
- Version no. added to text results screen/print out

VERSION - 1.55
- Now uses version 1.42 of PPD.EXE
- <Esc> used to abort processing of PrintGL print out
- Colour argument of 'PSET' & 'LINE' made Long Integer
- Configuration file now "PLE48.INI"

VERSION - 1.54
- Draws vertical ordinate at nominated values as in file "PLESPACE.LIN"
- Rounding off corrected to be same as print out

VERSION - 1.53
- 'Opposite' arrangement re-instated as maximum now determined using both lights

VERSION - 1.52
- '/FULL' command line option added for detailed calculation output to file
- Now support large asymmetrical I-table files
- Problem fixed in calculating Eh behind light
- 'Opposite' arrangement removed till Finding maximum is done properly
- Undocumented '/GRID' command line option added

VERSION - 1.51
- Uses PLE.HLP as the Help file
- Will use Hercules Graphics card
- Stand alone version displays colours in Help correctly

VERSION - 1.5
- Use PPD.EXE instead of PRINTGL
- Can be called from PLE.EXE (PLESPACE.INI automatically set up)
- Released with version 4.77 of Perfect Lite
- PPD.EXE outputs to DOS LPT? not BIOS LPT? (fixes bug with network printers)
- Uses PLE47.INI for configuration options

VERSION - 1.4
- NON Intel co-processor problem fixed

VERSION - 1.3
- Program corrected for when no solution found for a particular road width
- Thickness added to printer output

VERSION - 1.2
- PRINTGL used for graphics printer output

VERSION - 1.1
- Minor changes only

VERSION - 1.0 (Released 1990)
- Original issue