

V Category Lighting Software

for
AS/NZS 1158.1.1:2005



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1. INTRODUCTION

The **V Category Lighting** software (PleVcat) with the aid of the SAASTAN software can produce spacing tables which are used as design aids in checking compliance of lighting for straight/curved sections of Category 'V' roads.

It is assumed that the user has basic knowledge of the operations of the Windows PC operating system.

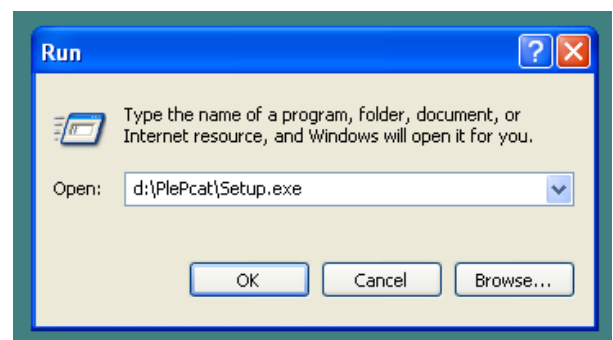
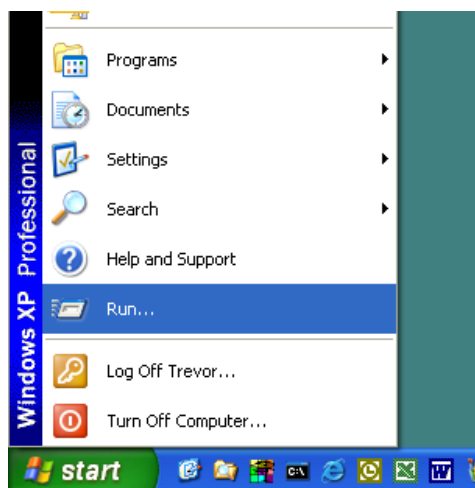
Before reading any further, briefly look through this manual and you will notice that screen snapshots have been used quite regularly. This has been done to make it easier for you to equate the manual with the operation of the software. The example used in the snapshots utilizes the sample photometric data supplied in the file named **LUM3.cie**.

2. INSTALLING THE SOFTWARE

The software can be provided in either of two forms:-

1. On a CD-ROM

First load the CD-ROM into your CD Drive and click on the **Start** button, Select **Run...** from the menu and type **d:\PleVcat\setup.exe** (**d:** is the drive letter of your CD-ROM) into the Run dialog box and then click **OK**.



Follow the subsequent instructions on screen to correctly install the PleVcat software on your computer. Generally, it will only be necessary to click on the **Next** button several times to carry out the installation.

2. Via Email or Download from the website

Instructions will be provided in the email or on the website on the procedure to install the software in this case.

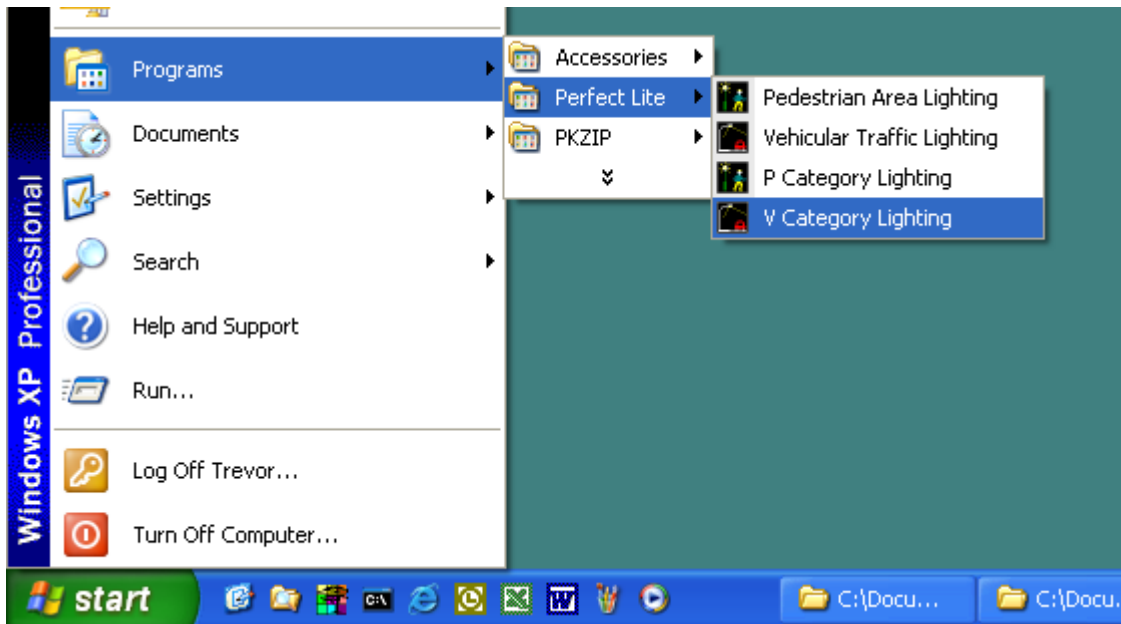
It is recommended you choose the default folder eg. **c:\Program Files\Perfect Lite** or (c:\Program Files (x86)\Perfect Lite on 64bit operating systems) in which to install the software. If you install it in another drive and/or folder then please make a note of the location below.

V Category Lighting software installed in:

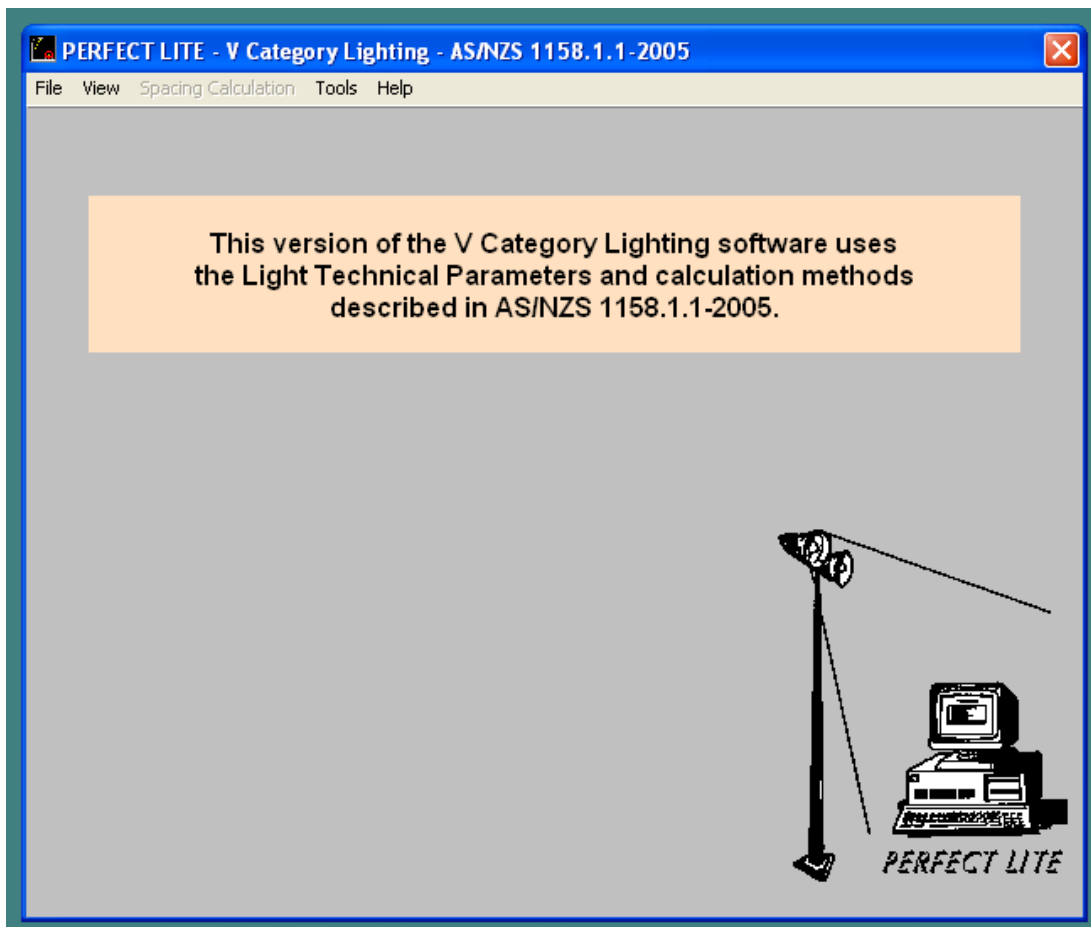
.....

3. STARTING THE SOFTWARE

Click on the **Start** button, select **Programs** then **Perfect Lite** then **V Category Lighting** from the menu. (Note: The menu may also show **Vehicular Traffic Lighting**, which is still available for use, but the LTPs and calculation methods relate to AS/NZS 1158.1.1:1997 – *the superceded Standard*.)



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 you undertake the 'brief tour of the software' as described in the following section.



4. BRIEF TOUR OF THE SOFTWARE

The **V Category** lighting software (PleVcat) in conjunction with the SAASTAN software can produce spacing tables which can be used as an aid in the design of lighting on straight/curved sections of Category 'V' road.

Category 'V' was originally introduced in the Code **AS/NZS 1158.1.1:1997**, released late in 1999 but has since been modified with further revisions released in 2005.

SAASTAN

Just a couple of points to note about the SAASTAN software which is supplied by Standards Australia with AS/NZS1158.2. SAASTAN was a mid 1980's Australian adaptation of the European STAN program used for road lighting (luminance) calculations in Europe. It is interesting to note that the actual SAASTAN software has not been modified since this time. Some of you might remember that in the 1980's PCs were relatively new, expensive, slow and were just starting to be used by consultants and Government departments. Previously, mainframe computers were predominantly used for lighting calculations (if not done by 'recipe' methods) which required different methods of input and output to what we take for granted these days. The SAASTAN program had a legacy of the mainframe computer era in that it operated in a 'Batch mode' i.e. all input and output was via files (originally punched cards), there was no interaction directly with the user. This is how my original **SAASTAN User Interface** software came about, basically to make SAASTAN useable mainstream. AS/NZS1158 basically requires the use of SAASTAN to determine compliance with the relevant Light technical Parameters specified in the Standard.

Included with the release of the revised Standard AS/NZS1158.2 in 2005 is a very basic shell program, called **STANSHELL**, to assist the user in applying the Code and using SAASTAN. My **PleVcat** software provides many additional features to the STANSHELL software.

There are many limitations in SAASTAN as you'll find out when you try to apply it to real world situations (eg. only one luminaire at a fixed height can be used at a time). Please note these limitations are within the SAASTAN software not PleVcat.

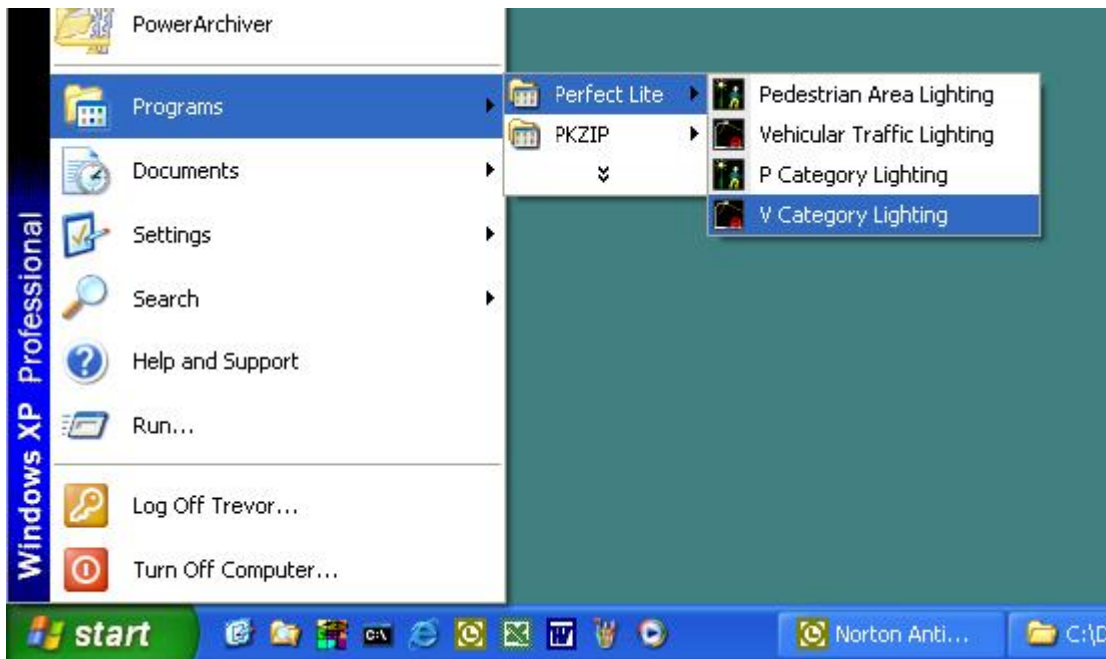
Due to the changed observer positions etc. in AS/NZS1158.2:2005, SAASTAN is now required to run in Mode 3 only. While this is generally transparent to the user, it does impact on the calculation times especially for New Zealand requirements due to the more calculations required.

If you want to know more about the detailed operation of SAASTAN then you could obtain a copy of the following documents:-

- 1) **ARRB Publication ARR106** - The Design and Implementation of Fixed Lighting for Arterial Roads and Freeways
- 2) **CIE Publication No. 30.2 (TC-4.6) 1982** - Calculation and Measurement of Luminance and Illuminance in Road Lighting

Anyhow, let us get on with exploring the software you have purchased.

Once the software has been properly installed it is started by clicking on the **Start** button, selecting **Programs** from the menu, then selecting **Perfect Lite** and then **V Category Lighting**, see below.

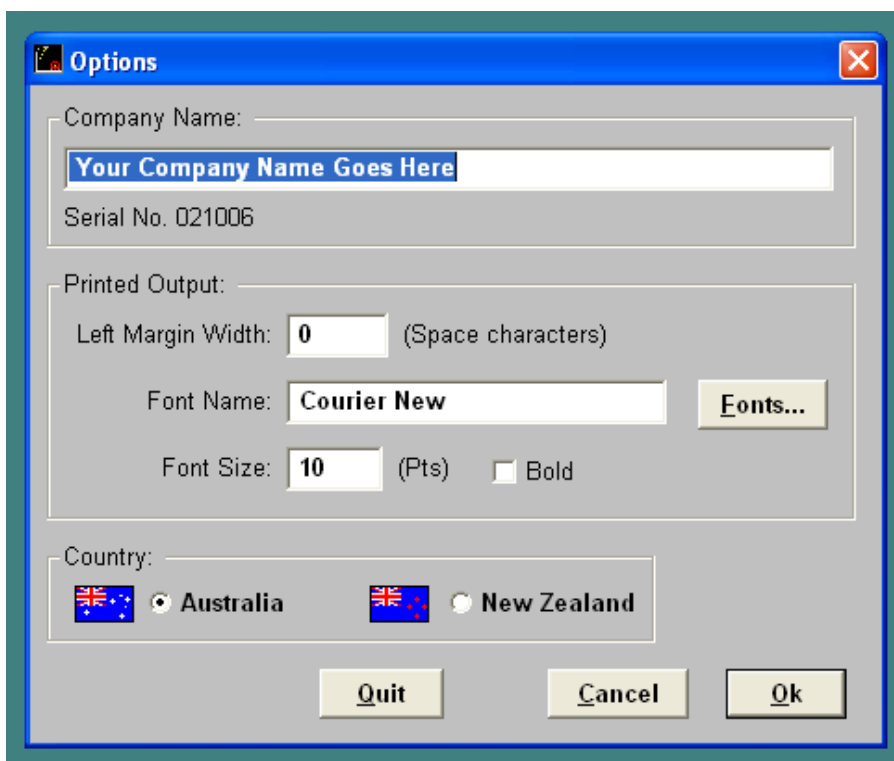


Alternatively, you can just double click on the PleVcat icon that should be on your desktop.



Add Company Name

When you first start the software you are generally prompted with the screen below where you enter your company name that will appear on all printed output.

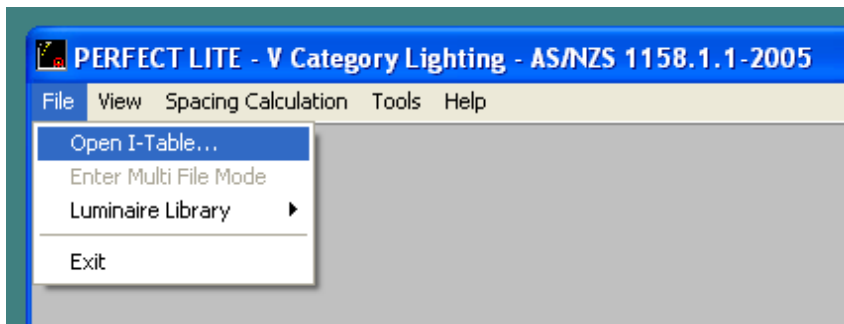


Simply type in the relevant name into the top field, the fields towards the middle can remain as they are but towards the bottom, select your Country. Your relevant Country should be selected as some Light Technical Parameters and calculation methods differ between Australia and New Zealand.

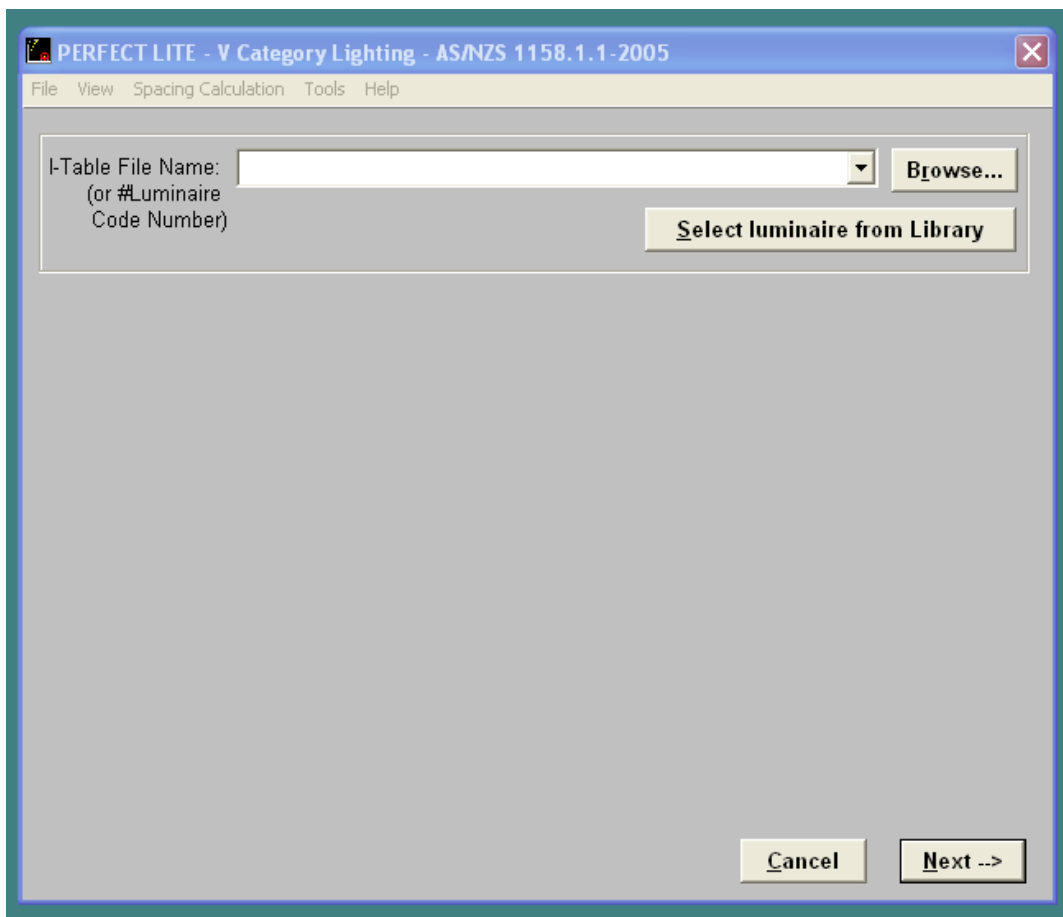
Load an I-table

Before you produce a spacing table (or do almost anything else in the software) it is necessary to open up (or load) a luminaire photometric I-table. These I-tables can be stored on your computer's hard drive or CD media as a file OR in the luminaire **Library** maintained within the software itself. To get you up and running the software is supplied with a sample I-table file (LUM3.cie) which corresponds to the one used in Appendix B of the AS/NZS 1158.2:2005. This file is also loaded into the evaluation Library supplied with the software. Later in the tutorial I'll describe how to load luminaires into the Library but for the moment we'll just look at using an I-table from a file.

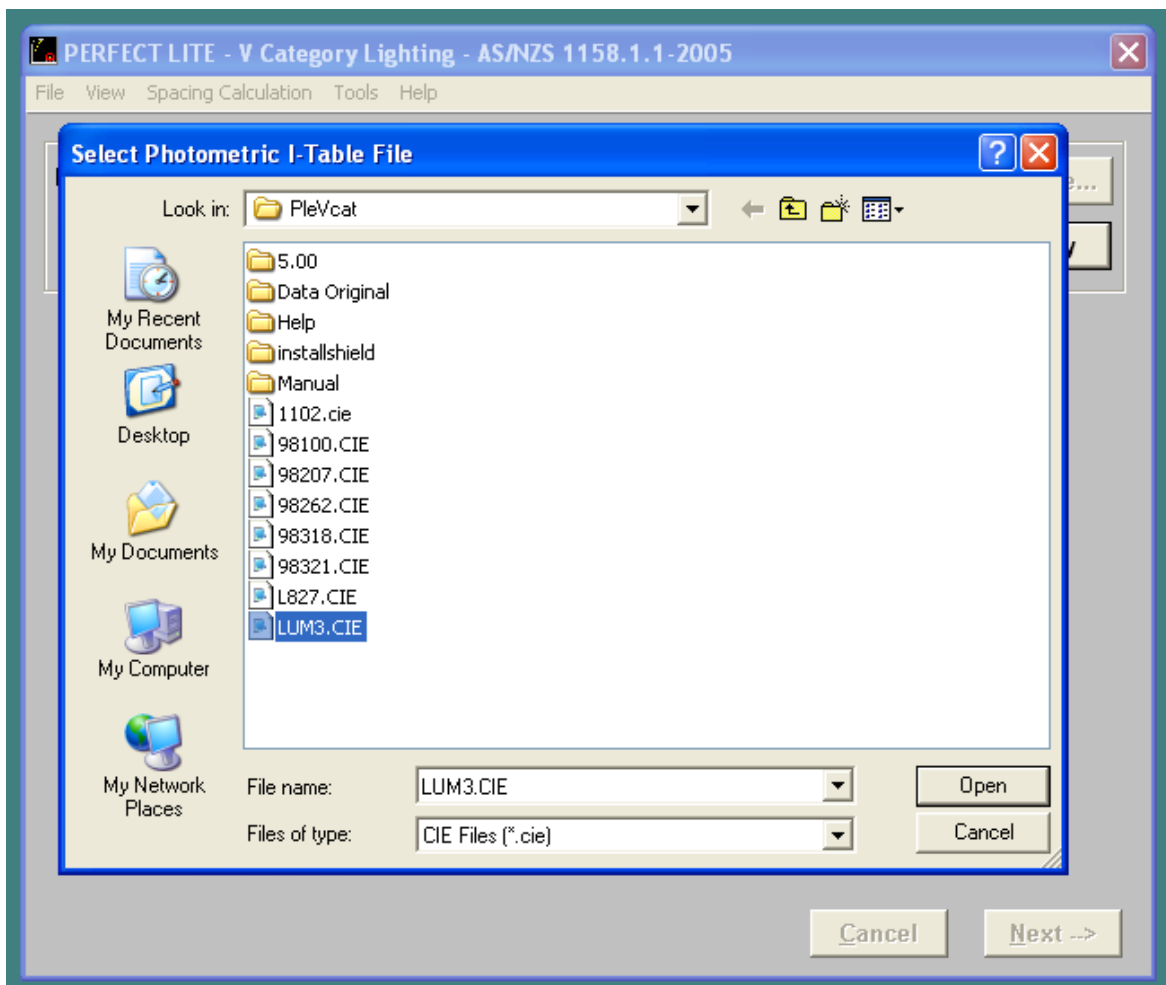
From the **File** menu click on **Open I-Table**.



This will then display the screen where you are required to input the file name (or luminaire code number).

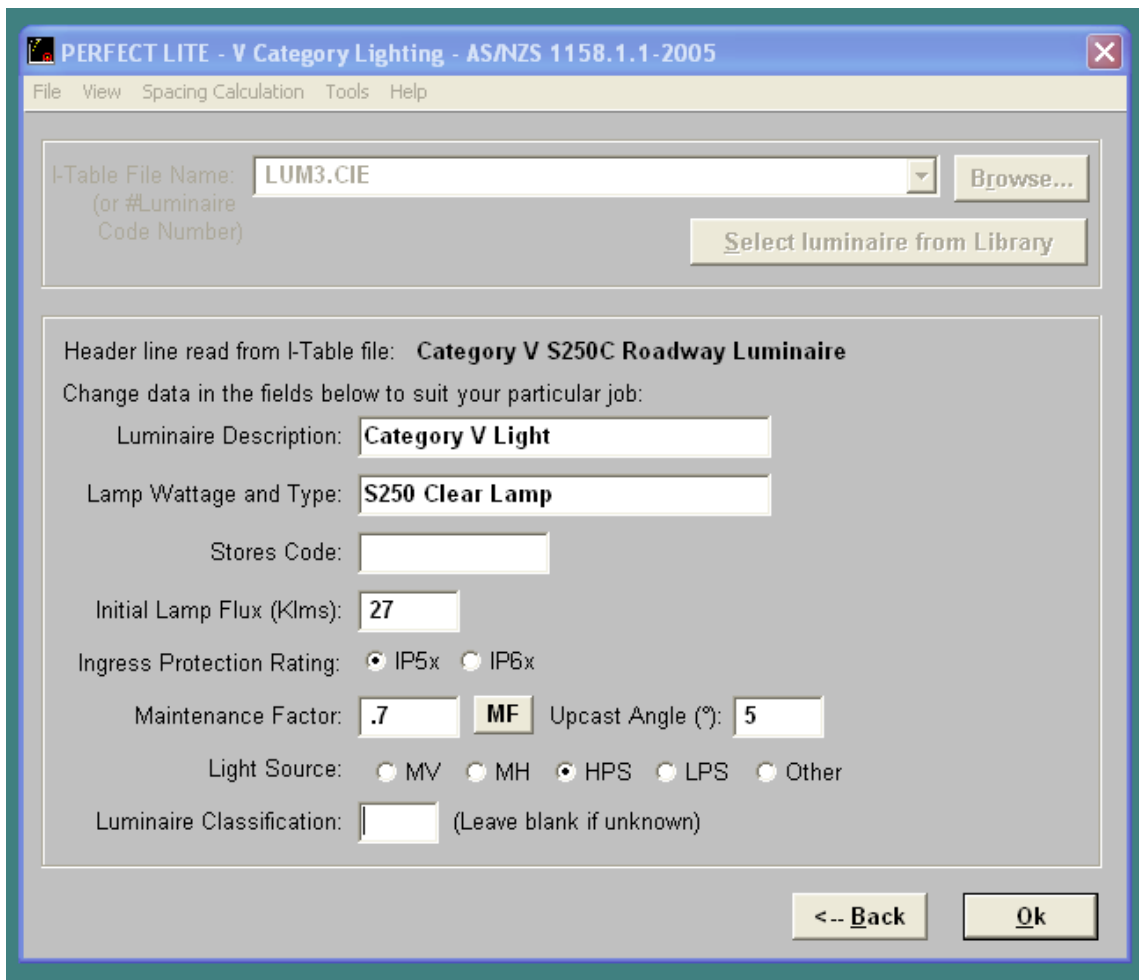


Each time you enter this screen (and most others in the program) the fields will be filled with the data last input. Should you wish to select a different file then either type the name directly into the **I-Table File Name** field OR click on the down arrow to right of field to select from the previous files used OR click on the **Browse** button to invoke the standard Window File Open Dialog Box, see example below.



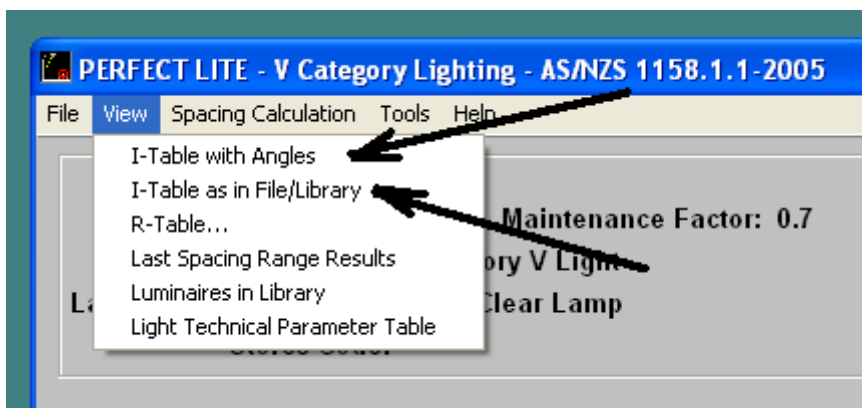
It should be noted that by default the dialog box will initially only display the files with a "cie" file extension, typical of road lighting luminaires. If this is not the type of file you are looking for make a choice from the **Files of type** drop down list box. When the desired file is in the **File name** field, click the **Open** button on the file dialog box to continue with the software.

When the file name has been entered click on the **Next** button to continue on with the software. On the following screen input descriptions of the luminaire being used, initial flux value, maintenance factor etc..



Data input 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 **Ok** button.

You have now loaded the I-table file 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.



Examples of the two selections are shown below.

PERFECT LITE - V Category Lighting - AS/NZS 1158.1.1-2005

Your Company Name Goes Here

I-Table filename: LUM3.CIE
Luminaire: Category V Light
Lamp Type: S250 Clear Lamp
Symmetry: YES (about 90-270 azimuth angle plane)

C->	270	285	300	310	315	320	325	330	335	340	345	350	355	0
0	156	156	156	156	156	156	156	156	156	156	156	156	156	156
10	131	132	134	136	138	139	141	143	145	148	150	152	155	157
20	131	142	148	143	142	141	141	144	150	157	164	171	174	177
30	157	183	178	175	186	190	189	194	202	207	210	210	210	207
35	163	177	178	198	195	200	209	225	244	256	261	263	268	271
40	155	160	164	171	174	188	206	223	238	252	261	264	266	268
45	137	139	147	155	162	178	195	213	230	245	254	259	266	269
47.5	127	131	139	146	156	169	188	207	224	241	249	258	265	270
50	116	122	131	139	148	161	181	200	218	237	249	255	260	265
52.5	106	112	123	131	140	153	173	194	212	235	245	255	262	267
55	96	105	115	124	134	146	167	187	212	229	244	255	266	274
57.5	86	99	109	119	129	139	161	183	203	226	245	258	266	276
60	79	92	100	115	123	136	156	181	201	224	244	261	277	291
62.5	70	79	94	108	119	134	152	174	195	220	249	280	303	321
65	61	69	86	104	113	128	149	171	192	218	254	293	340	375
67.5	53	61	79	97	107	122	141	160	182	215	250	289	340	382

[2 pages, if printed]

Save As... Print Close

PERFECT LITE - V Category Lighting - AS/NZS 1158.1.1-2005

Your Company Name Goes Here

I-Table filename: LUM3.CIE

3 1 0 Category V S250C Roadway Luminaire

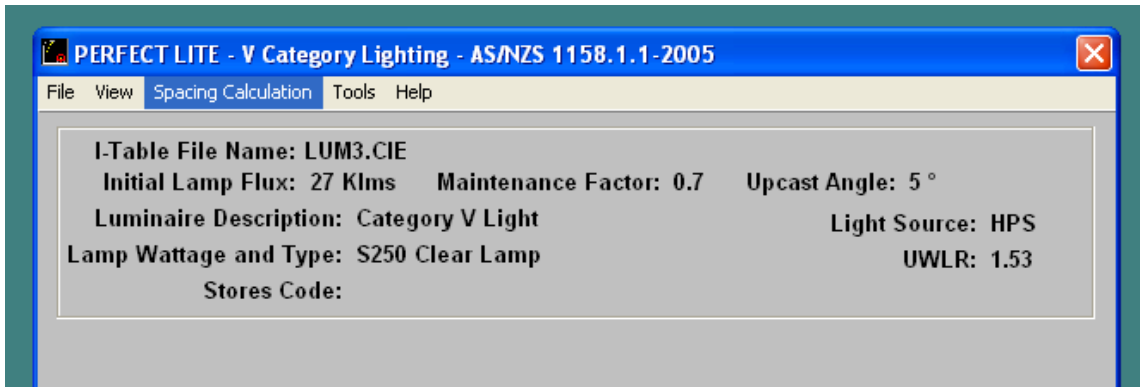
156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156
156	156	156	156	156	156	156	156	156	156	131	132	134	136	138	139	141
143	145	148	150	152	155	157	159	161	162	163	164	165	165	166	166	166
166	165	166	131	142	148	143	142	141	141	144	150	157	164	171	174	177
180	182	184	186	183	181	178	171	167	163	159	152	150	157	183	178	175
186	190	189	194	202	207	210	210	210	207	202	195	188	184	178	173	168
165	164	155	140	132	127	163	177	178	198	195	200	209	225	244	256	261
263	268	271	273	272	266	251	221	186	170	160	154	149	131	126	125	155
160	164	171	174	188	206	223	238	252	261	264	266	268	269	270	269	263
258	255	234	193	168	158	136	132	133	137	139	147	155	162	178	195	213
230	245	254	259	266	269	269	268	266	257	251	246	230	228	215	181	150
138	139	127	131	139	146	156	169	188	207	224	241	249	258	265	270	271
268	263	255	244	236	228	216	208	188	161	140	137	116	122	131	139	148
161	181	200	218	237	249	255	260	265	269	270	267	254	242	228	221	209
189	178	147	134	129	106	112	123	131	140	153	173	194	212	235	245	255
262	267	270	269	261	253	241	229	215	200	180	159	135	125	118	96	105
115	124	134	146	167	187	212	229	244	255	266	274	279	277	268	252	236
217	206	192	169	150	128	114	107	86	99	109	119	129	139	161	183	203
226	245	258	266	276	283	284	272	254	238	218	201	183	162	139	116	103
97	79	92	100	115	123	136	156	181	201	224	244	261	277	291	301	302
286	264	237	216	197	170	150	129	109	93	87	70	79	94	108	119	134

[1 page, if printed]

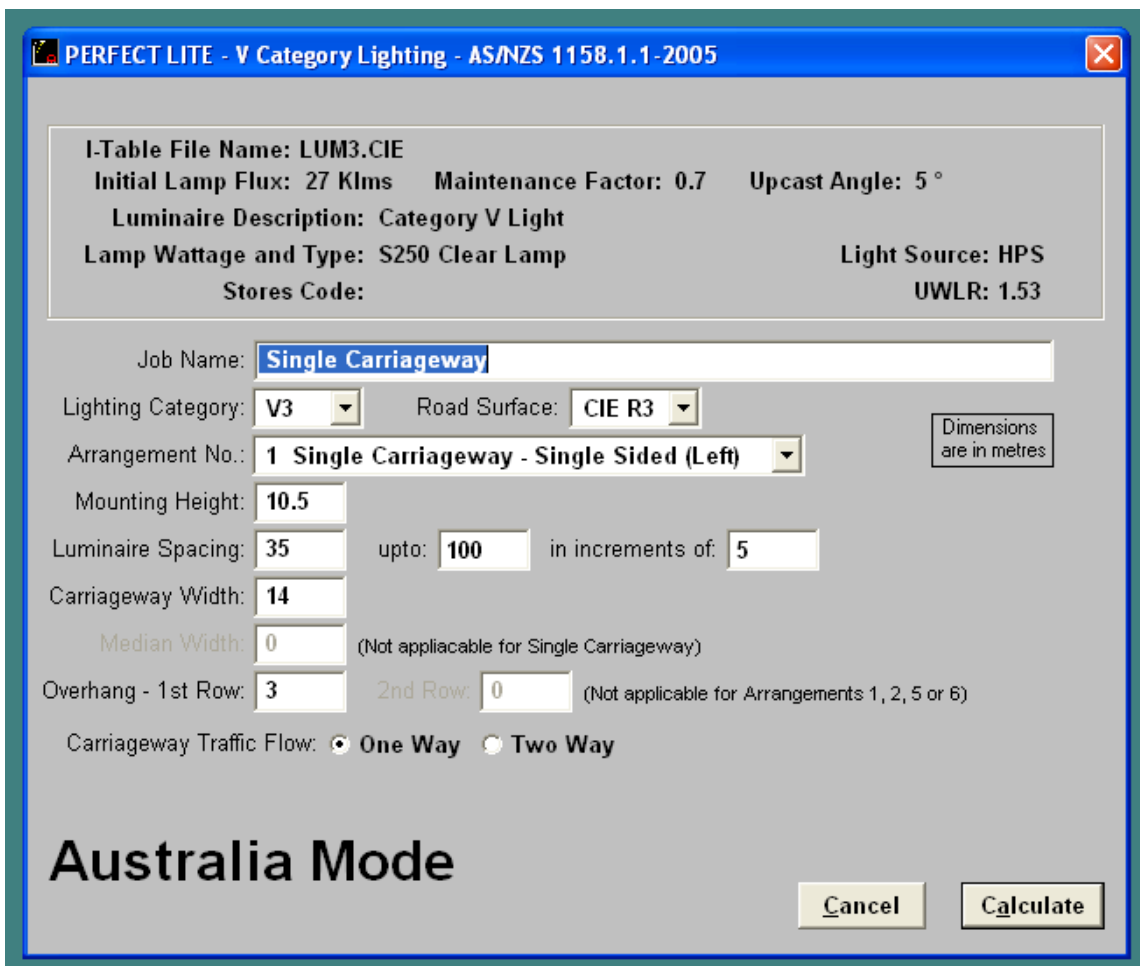
Save As... Print Close

Spacing Table/Check Compliance

What we really want to do is produce a spacing table or confirm compliance of a design with a particular road lighting category. Click on the **Spacing Calculation** menu.



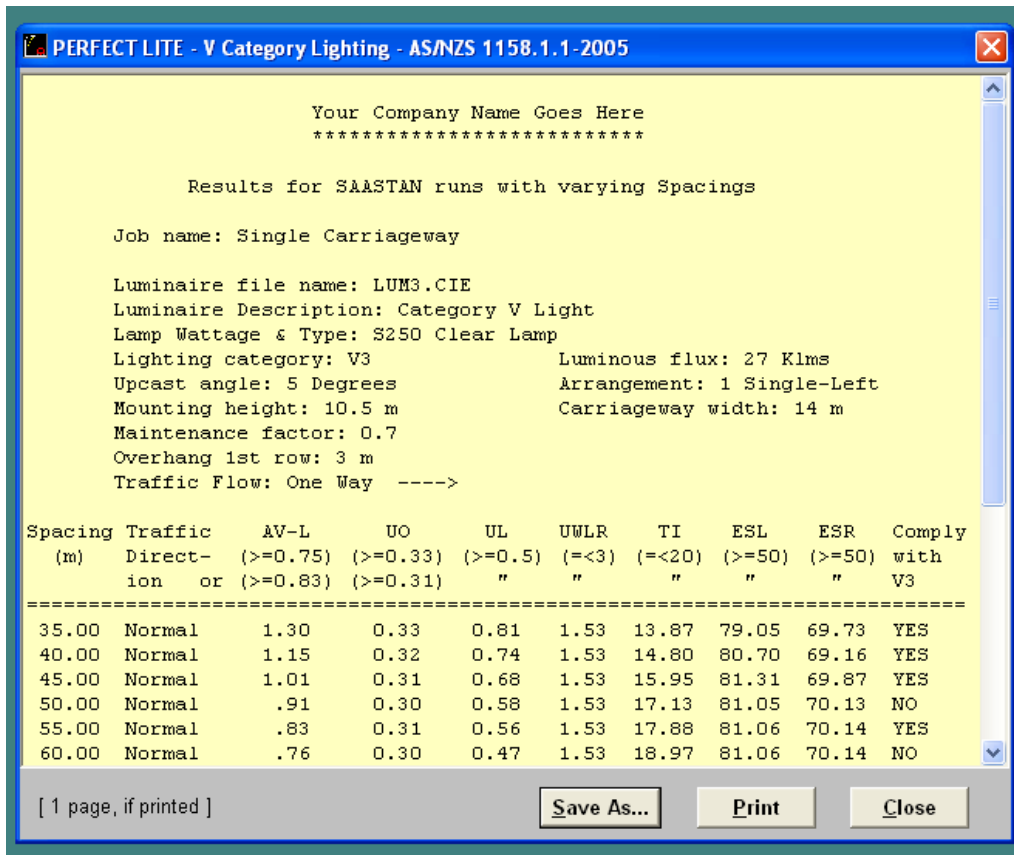
The screen will change to show several input fields to be filled with appropriate data relative to the table you wish to produce or road lighting design layout. If this is the first time the software has been run it should have the default values as used in Appendix B of the AS/NZS 1158.2:2005.



For this tutorial alter the fields to that shown on the above screen.

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 (ie. Left mouse click in the field) and press the **F1** key. A pop-up Help screen will appear giving you information on the contents of the field and limit of values that can be input. This help feature is also available for any item on a Menu, any button or screen displayed. To remove the Help

screen click on the **X** in top right-hand corner of the Help screen. Now, press the **Calculate** button to get the software to carry out the necessary calculations to determine the compliant spacings for the range selected. An example of the top part of the results are displayed on the screen as shown below.



Use the scroll bar on the right side of the screen to move the display up to view more of the results.

PERFECT LITE - V Category Lighting - AS/NZS 1158.1.1-2005

Traffic Flow: One Way ---->

Spacing (m)	Traffic Direction or	AV-L (>=0.75) or (>=0.83)	UO (>=0.33) or (>=0.31)	UL (>=0.5) or "	UWLR (= < 3) or "	TI (= < 20) or "	ESL (>=50) or "	ESR (>=50) or "	Comply with V3
35.00	Normal	1.30	0.33	0.81	1.53	13.87	79.05	69.73	YES
40.00	Normal	1.15	0.32	0.74	1.53	14.80	80.70	69.16	YES
45.00	Normal	1.01	0.31	0.68	1.53	15.95	81.31	69.87	YES
50.00	Normal	.91	0.30	0.58	1.53	17.13	81.05	70.13	NO
55.00	Normal	.83	0.31	0.56	1.53	17.88	81.06	70.14	YES
60.00	Normal	.76	0.30	0.47	1.53	18.97	81.06	70.14	NO
65.00	Normal	.70	0.29	0.42	1.53	20.02	81.05	70.13	NO
70.00	Normal	.65	0.27	0.36	1.53	21.03	81.05	70.13	NO
75.00	Normal	.61	0.27	0.30	1.53	22.04	81.05	70.13	NO
80.00	Normal	.57	0.25	0.27	1.53	22.68	81.06	70.14	NO
85.00	Normal	.54	0.21	0.21	1.53	23.67	81.06	70.14	NO
90.00	Normal	.51	0.18	0.18	1.53	24.65	81.06	70.14	NO
95.00	Normal	.49	0.15	0.14	1.53	25.62	81.06	70.14	NO
100.00	Normal	.46	0.12	0.10	1.53	26.58	81.06	70.14	NO

NOTE: Where 'Normal' &/or 'Oncoming' lines are shown, compliance with the nominated Category, at a particular spacing, is only applicable when there is a 'Yes' on each line i.e. ANY 'No' indicates failure at that spacing.

[1 page, if printed]

Save As... Print Close

To print out the complete results (Table) on your printer click on the **Print** button and the standard Windows print dialog box will be displayed.

PERFECT LITE - V Category Lighting - AS/NZS 1158.1.1-2005

PERFECT LITE - V Category Lighting - AS/NZS 1158.1.1-2005

Print

General

Select Printer

Add Printer Acrobat Distiller Acrobat PDFWriter Canon PIXMA IP3000 Epson EPL-5200

Status: Ready Print to file Preferences

Location: Find Printer...

Comment:

Page Range

All Selection Current Page

Pages:

Number of copies: 1

1 1 2 2 3 3

Print Cancel

PERFECT LITE - V Category Lighting - AS/NZS 1158.1.1-2005

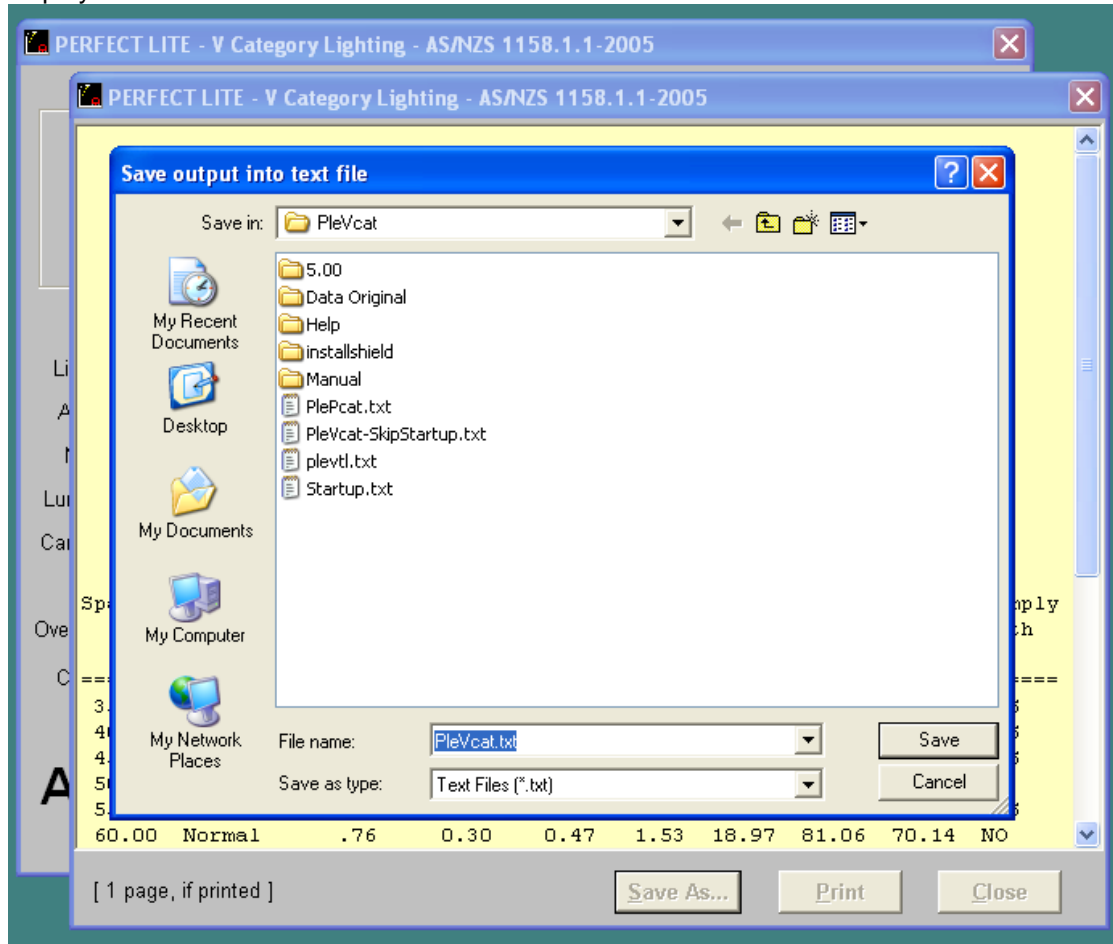
Spacing (m)	Traffic Direction or	AV-L (>=0.75) or (>=0.83)	UO (>=0.33) or (>=0.31)	UL (>=0.5) or "	UWLR (= < 3) or "	TI (= < 20) or "	ESL (>=50) or "	ESR (>=50) or "	Comply with V3
35.00	Normal	1.30	0.33	0.81	1.53	13.87	79.05	69.73	YES
40.00	Normal	1.15	0.32	0.74	1.53	14.80	80.70	69.16	YES
45.00	Normal	1.01	0.31	0.68	1.53	15.95	81.31	69.87	YES
50.00	Normal	.91	0.30	0.58	1.53	17.13	81.05	70.13	NO
55.00	Normal	.83	0.31	0.56	1.53	17.88	81.06	70.14	YES
60.00	Normal	.76	0.30	0.47	1.53	18.97	81.06	70.14	NO

[1 page, if printed]

Save As... Print Close

Select the desired printer, if not the default, and click on the **Print** button to produce the printout.

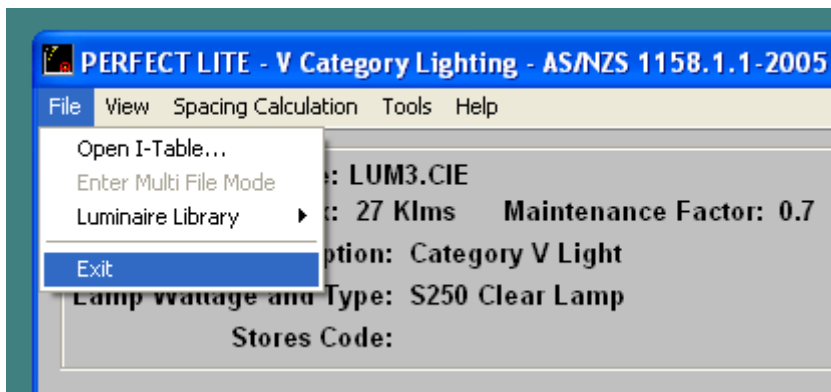
This table can be used for future situations, where you have a similar arrangement. Or if the results relate to a particular layout then you can simply check the right most column, if the design complies with the selected Category/Spacing. You can also save the results to a text file if you prefer by clicking on the **Save As...** button and the standard Windows save as dialog box will be displayed.



Enter a suitable file name and click on the **Save** button to create the file. If the file already exists you will get the choice whether to overwrite the file or append to the end of it.

Once the printout has been produced (or file saved), click on the **Close** button to remove the calculated results from the screen and return to the software where you can change some of the input values and produce another table etc. If you don't want to produce another table then click on the **Cancel** button. This will take you back to the point where you can make another selection from the main menu along the top line of the PleVcat window.

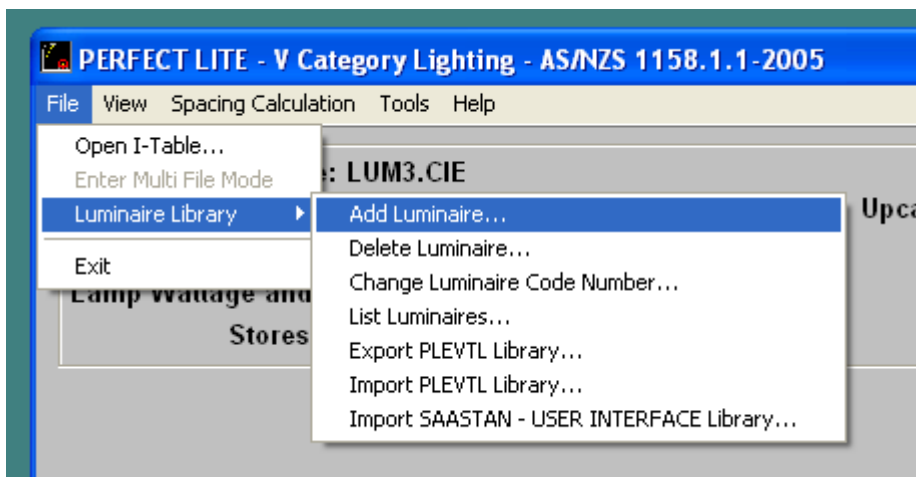
To close down the program altogether select the **Exit** option from the **File** menu (or click on the **X** in the top right-hand corner of the PleVcat window).



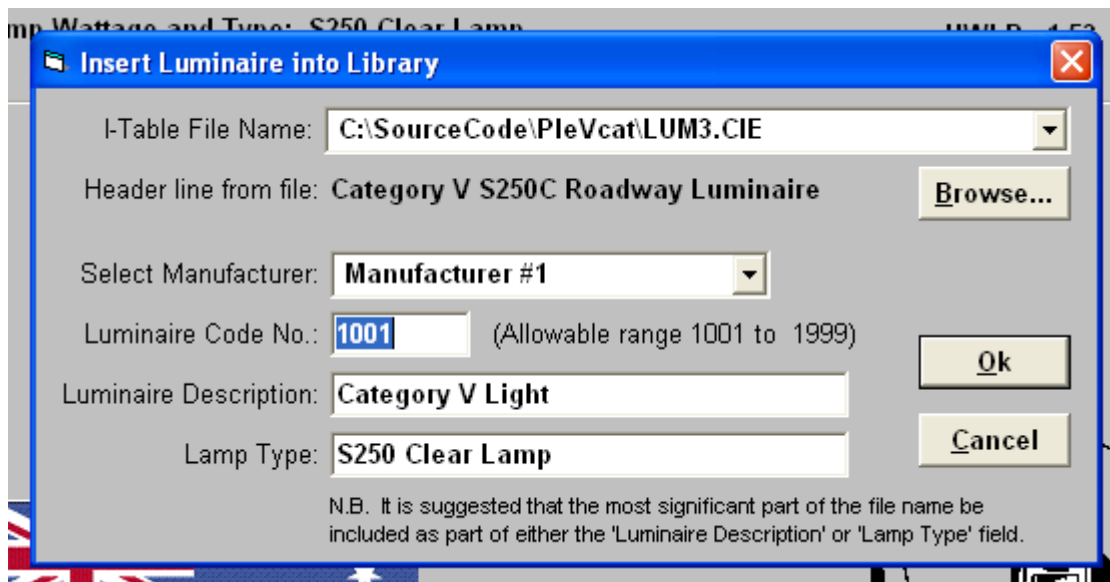
Add Luminaires to the Library

I mentioned earlier in this tutorial about loading luminaires into the **Library** maintained within the PleVcat software. This is relatively simple to do, and after a luminaire is loaded, only requires you to nominate a 4 digit 'code number' whenever you want to use that particular luminaire in a calculation.

Select **Luminaire Library** from the **File** menu then click on **Add Luminaire...**

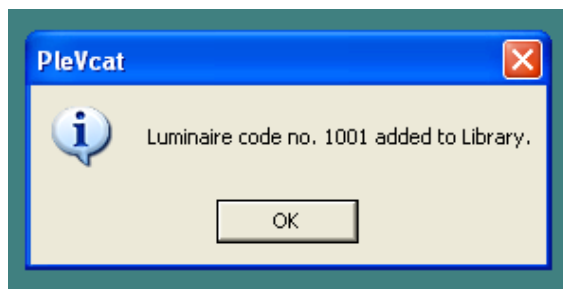


A file dialog box will be displayed where you input the file name of the luminaire I-table file you wish to add to the Library. In our case, we'll just add the evaluation luminaire in file **LUM3.cie**. If you want to add another file just use the **Browse...** button to locate the desired file. N.B. The Library and the SAASTAN program itself will only accept I-tables in the CIE/SAASTAN format not the IESNA format.



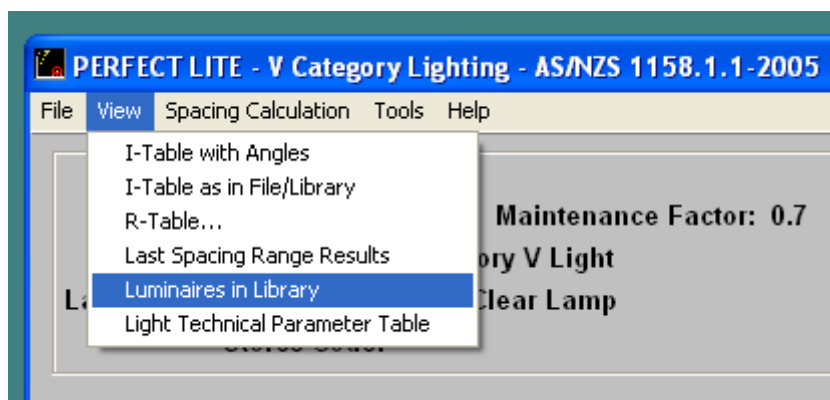
Fill in the remainder of the fields on the screen as required. If in doubt as to what should be entered into any field locate the cursor in that field and press the **F1** key and a small Help window will appear.

Click the **Ok** button and a confirmation message will be displayed to show the file has been saved in the Library.

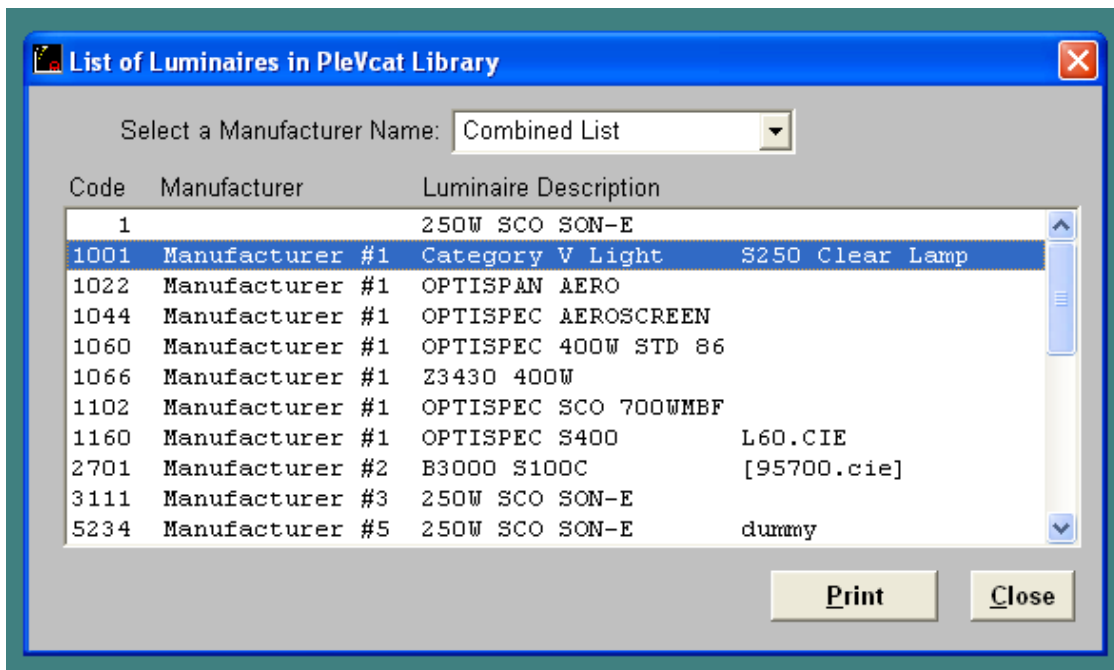


List Luminaires in Library

To list luminaire in the Library, select **Luminaires in Library** from the **View** menu.



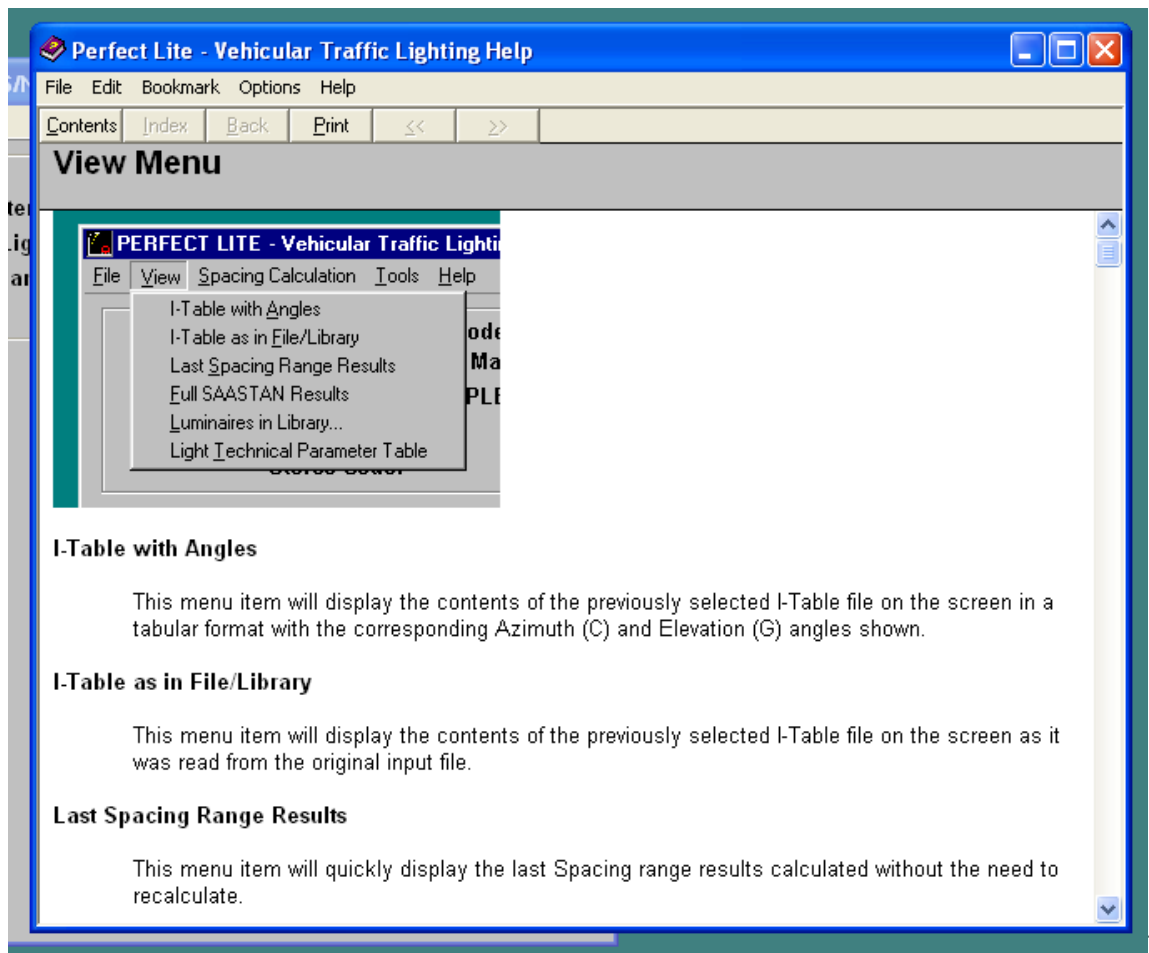
A display similar to that below will appear. By default, the listing will show all the luminaires in the Library (i.e. Combined list). If you just want those from one manufacturer, pick the appropriate name from the **Select a Manufacturer Name:** drop down list box.



The listing can be sent to your printer by clicking on the **Print** button, which will invoke the Window print dialog box.

Remaining Choices from the Menu

The remaining choices from the menu are fairly self explanatory so I won't go into detail 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 (sample for the **View** menu is below).



Should you encounter any problems using this software or would like to offer suggestions on future enhancements then please contact the developer at support@perfectlite.com