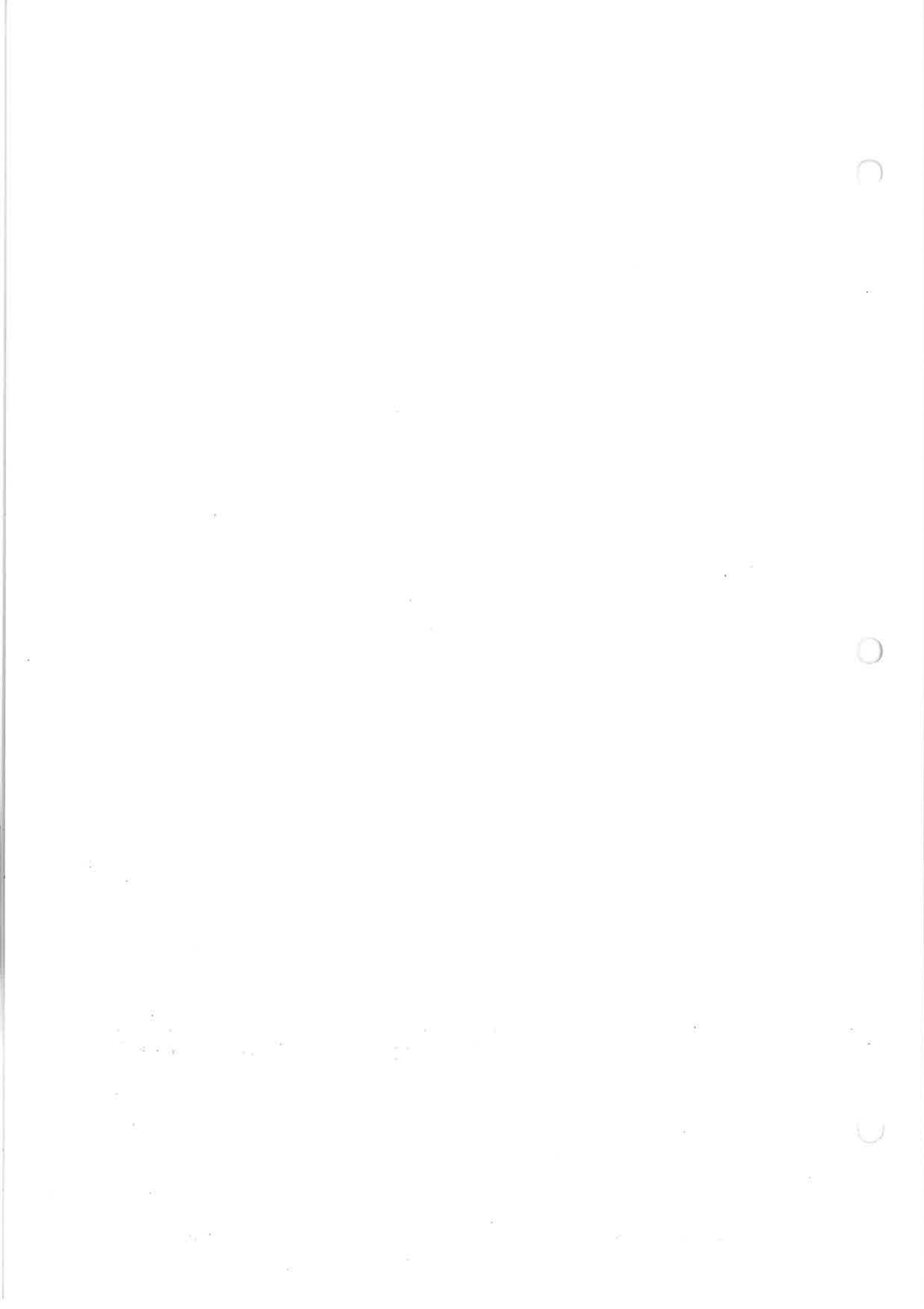


**DEVELOPMENT DESIGN  
SPECIFICATION**

**D9**

**PUBLIC LIGHTING**



## SPECIFICATION: PUBLIC LIGHTING

### Scope

The design of public lighting as described in AS 1158 and AS 4282.

### Reference Documents - Public Lighting Standards

Public lighting shall be designed, constructed and maintained in accordance with the requirements of the relevant Australian Standards. These standards are:

- AS1158.0:1997, Road Lighting – Introduction, sets out definitions and lighting categories needed for reference in the other AS1158 series. Applies to roads and other outdoor public areas.
- AS1158.1.1:1997, Road Lighting - Vehicular Traffic (Category V) Lighting – Performance and installation design requirements
- AS1158.1.3:1997, Road Lighting - Vehicular Traffic (Category V) Lighting – Guide to design, installation, operation and maintenance
- AS1158.3.1:1999, Road Lighting - Pedestrian Area (Category P) Lighting -Performance and installation design requirements
- AS1158.4:1987, Supplementary Lighting at Pedestrian Crossings
- AS4282 – Control of the obtrusive effects of outdoor lighting

### Lighting Policy Variances To Australian Standard

1. The public lighting policy varies the lighting standards to the Australian Standard.
2. The policy provides that street lighting, carpark lighting, lighting of public areas, and lighting of buildings is designed and sited so as to prevent upward light spillage so as to protect night sky qualities and minimise the penetration of 'light spillage' to areas not intended for illumination.
3. The lighting policy maintains the existing level of lighting that already exists in the main urban areas of the Shire while making more provisions vegetation and therefore increasing security.

### Lighting of Specific Use Areas

3. Vehicle Categories – V1 to V5 - Refer to the extract from the Standard shown in Appendix 1
4. Pedestrian Categories – P1 to P12 - Refer to the extract from the Standard of road/area types and indicative lighting categories which is shown in Appendix 2
5. Designers must match the type of road usage with the relevant pedestrian or vehicle category.

## **Pedestrian Categories**

Within towns, villages, residential streets, pathways and industrial areas are to be lit with public lighting. The lighting is to be serviced by underground power.

Lighting in streets and pathways in urban residential and industrial development is to be to a minimum standard of P4. A risk assessment is required to be submitted to Council in order to assess the appropriate level of lighting of pedestrian paths, recreational paths and paths through parks and reserves. These will be assessed individually on their merits, and where lighting is indicated must not be less than P4. Historically in Wingecarribee Shire, recreational paths have not been lit.

Lighting in residential subdivisions where the minimum lot size is less than 2000 square metres and industrial subdivisions shall be provided to P4. The lighting design must specify vegetation envelopes where the provision of street vegetation does not adversely affect the level of lighting, especially in terms of traffic safety and security.

Street Lighting for roundabouts in residential and industrial areas be provided to P4.

Street Lighting for development in areas zoned for a minimum lot size greater than 2000 square metres be provided to P4 at road intersections only.

Lighting categories P1, P2 and P3 may be used where there is increased pedestrian activity, a heightened risk of crime or a need to enhance prestige as follows:

- Higher level of pedestrian/cycle activity – lighting levels may be increased in areas of moderate to high pedestrian activity.
- Risk of crime – P3, P4 and P5 are used where there is a low risk of crime with P1 and P2 being used where the risk is higher. A limitation on the effectiveness of using increased lighting to reduce crime is that there must be potential observers.
- Need to enhance prestige – this allows for increased lighting where a higher degree of prestige and amenity is desired.

Outside the town and village areas, rural residential subdivisions with lot sizes of 40 Ha or greater do not require pedestrian lighting.

**Public Activity Areas** such as a civic square, a shopping mall or a Transport Terminal must be lit to a minimum of P8. Lighting categories P6 and P7 may be used where there is increased pedestrian activity, a heightened risk of crime or a need to enhance prestige. Note that carparks are treated separately below.

**Connecting elements** such as stairways and ramps are to be lit to a minimum of P9 and subways to P10.

**Carparks** – P11 (parking spaces, aisles and circulation roadways) or P12 (accessible parking spaces) is specified in AS1158.3.1:1999 for carparks without qualification for size or location. P11 or P12 must be used for carparks with frequent use by the public at night such as at a railway station, supermarket or shopping centre. Lighting of all other carparks must

be to P8. Lighting is not required if it can be demonstrated that there is negligible use of the proposed carpark at night.

**CBD/High Pedestrian Areas** – white light sources such as Metal Halide or Mercury Vapour lamps are preferred in civic/retail areas.

### **Vehicle Categories**

Arterial and sub-arterial roads in built-up areas are to be lit to a minimum standard of V3. V1 or V2 may be specified for arterial roads with high volumes of pedestrians and/or vehicles and high traffic generation from abutting properties.

Lighting of rural roads and intersections outside the town and village areas is to be carried out on a traffic safety and risk basis. There is generally no lighting in rural areas except on classified roads. Flag lighting at intersections or traffic management devices may also be required.

The **traffic management devices** listed below are examples of the devices required to be very brightly lit (3.5 lux) according to AS1158.3.1 (1999).

- Roundabouts
- Marked Footcrossings
- Traffic and pedestrian signals

### **Who owns the Process within Council**

1. Council must specify the level of public lighting in the Shire.
2. Council's Development Control Branch is responsible for specifying the minimum level of lighting for new developments and subdivisions according to this policy and Council resolutions. Integral Energy's Public Lighting Design Brief (Appendix 3) must be completed and forwarded to Integral Energy for all proposed lighting projects.
3. Council's Technical Services Division is responsible for specifying the level of lighting on the existing road network. Public lighting of roads is managed by the Roads and Traffic Branch while the Parks and Property Section specifies the lighting of Council buildings and within parks and reserves.

### **Vegetation Management**

Designers must satisfy the aim of lighting the whole road area, from boundary to boundary, with acceptable uniformity and a minimum of shadows. The design of road lighting must consider existing and proposed footway trees and in particular their final mature characteristics. The type and location of trees, their spacing, ground clearance, spread and density of foliage are critical to the location of lighting and selection of luminaires.

In all cases, the design of the landscaping must be coordinated with the design of the lighting. The lighting designer must specify vegetation envelopes on the plans. These locations must be the only locations where vegetation is permissible.

### **Types of Lighting Equipment**

Luminaires are to be from Integral Energy's list of approved luminaires. Any luminaire that does not appear on the list of approved luminaires can only be connected to Public Lighting as rate 3. Details are set out in Integral Energy's "General Terms and Conditions for the Connection of Public Lighting".

Designers are limited to the following poles:

- Standard galvanised pole
- Macarthur – powdercoated
- Bentleigh– powdercoated

Galvanised light poles can be painted the following colours only – Hawthorn Green, charcoal, black or unpainted.

Lists of approved Lighting Equipment for lamps and luminaires are shown in Appendix 4.

Building awnings – any new buildings with an awning shall have under awning lighting and the awning shall be structurally sound and signed off on every five years.

Whilst developers must pay for the installation of new lighting, Council is responsible for all maintenance costs. It is to be noted that Integral Energy's maintenance fees only cover the cost of maintaining standard light fittings and columns. Council is responsible for repainting painted columns.

### **Location of Lighting Equipment**

Designers must consider visual guidance of the motorist and the effect the positioning of luminaires has on delineation of the road:

- A central or two-sided alignment of luminaires may be desirable on wide roads
- Single-sided provides a good level of visual guidance
- Staggered provides less visual guidance, but may be the only solution for more heavily landscaped sites

Designers must show the following level of detail on lighting designs

- K&G, property boundaries
- Pole positions – offset from boundary, spacing between lights
- Landscaping – size, type and location of plantings including species
- Scale to be not greater than 1:500

### **Lighting not on Integral's Street Lighting Circuit**

- Decorative lighting for malls, walkways, arcades, memorials
- Community title developments

- **Private property**

A standard meter board must be installed to which Integral Energy connects the power. The above decorative or community lighting is then powered from the meter board.

Appendix 1

AS/NZS 1158.3.1:1999

TABLE 1.1  
LIGHTING CATEGORIES FOR ROADS IN LOCAL AREAS

1	2		3	4		5	6
	Type of road or pathway			Selection criteria*			
General description	Basic operating characteristics		Pedestrian/cycle activity	Risk of crime	Need to enhance prestige	Applicable lighting category†	
Collector roads or non-arterial roads which collect and distribute traffic in an area, as well as serving abutting properties	Mixed vehicle and pedestrian traffic		Medium Low	Low Low	Medium N/A	P3 P4‡	
Local roads or streets used primarily for access to abutting properties, including residential properties	Mixed vehicle and pedestrian traffic		Medium Low Low	Low Low Low	Medium N/A N/A	P3 P4‡ P5‡	
Common areas, forecourts of cluster housing	Mixed vehicle and pedestrian traffic		Medium Low	Low Low	Medium N/A	P3 P4‡	

\* The selection criteria of Columns 3 to 5 should be separately evaluated. The highest level of any of the selection criteria that is deemed appropriate for the road will determine the applicable lighting category.

† Lighting categories P3, P4 and P5 apply across the whole of the road reserve width. Lighting categories P1 or P2 in Table 1.2 may be selected where there is a significant risk of crime or need to enhance the prestige of the area, however, such lighting only applies over the physical extent of any formed pathway.

‡ The lighting categories P4 and P5 are comparable to the superseded categories B1 and B2 as set out in AS 1158.1 — 1986.

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Appendix 2

AS/NZS 1158.1.1:1997

6

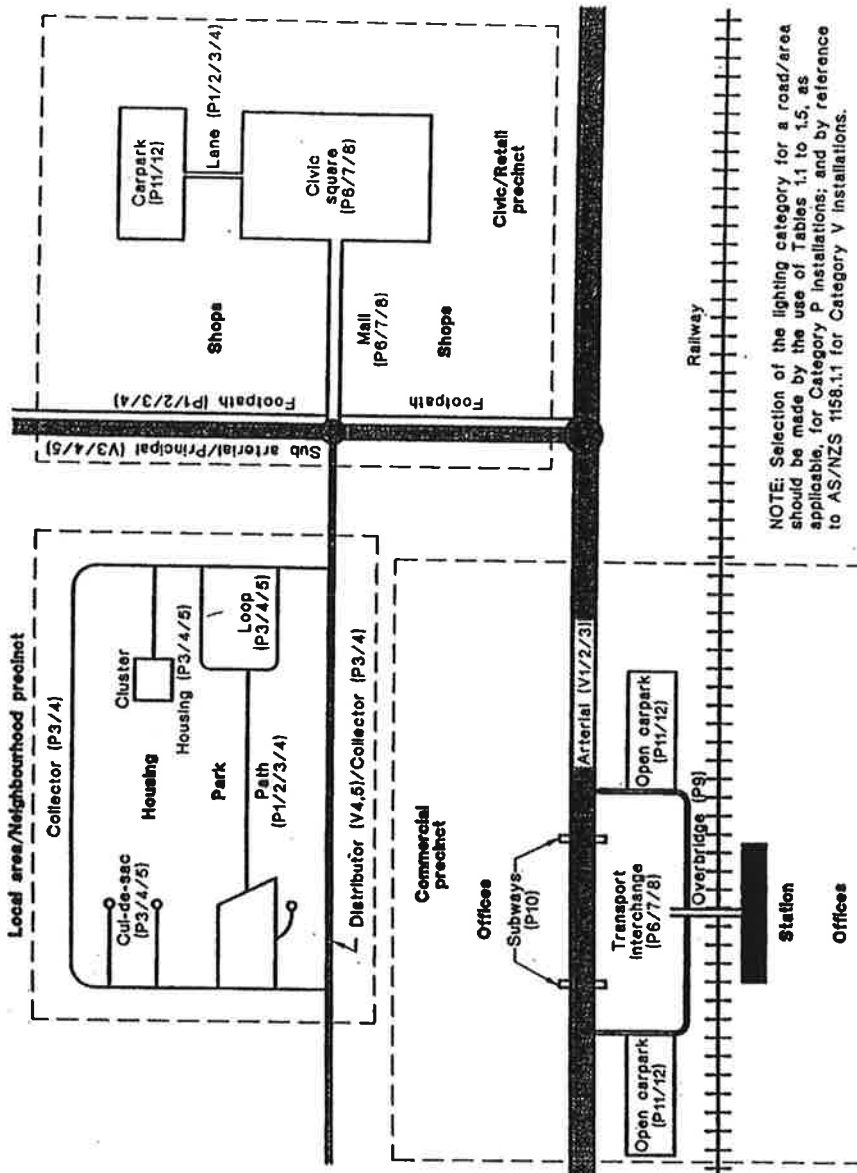
TABLE 1.1  
CATEGORY V LIGHTING AND TYPICAL APPLICATIONS

Typical applications		Lighting category
Description of road or area type	Operating characteristics	
Arterial or main roads in central and regional activity centres of capital and major provincial cities, and other areas with major abutting traffic generators	<ul style="list-style-type: none"> <li>— Mixed vehicle and pedestrian traffic</li> <li>— High to very high vehicle volume</li> <li>— High to very high pedestrian volume</li> <li>— Moderate to low vehicle speeds</li> <li>— Stationary vehicles alongside the carriageway</li> <li>— Through and local traffic</li> <li>— High traffic generation from abutting properties</li> </ul>	V1
Arterial roads that predominantly carry through traffic from one region to another, forming principal avenues of communication for traffic movement, with major abutting traffic generators	<ul style="list-style-type: none"> <li>— Mixed vehicle and pedestrian traffic</li> <li>— High vehicle volume</li> <li>— High pedestrian volume</li> <li>— Moderate to high vehicle speeds</li> <li>— Stationary vehicles alongside the carriageway</li> <li>— Through and local traffic</li> <li>— High traffic generation from abutting properties</li> </ul>	V2
Freeways, motorways and expressways consisting of divided highways for through traffic with no access for traffic between interchanges and with grade separation at all intersections	<ul style="list-style-type: none"> <li>— Vehicle traffic only</li> <li>— High to very high vehicle volume</li> <li>— High speeds</li> </ul>	V3
Arterial roads that predominantly carry through traffic from one region to another, forming principal avenues of communication for traffic movements	<ul style="list-style-type: none"> <li>— Mixed vehicle and pedestrian traffic</li> <li>— Moderate to high vehicle volume</li> <li>— High pedestrian volume</li> <li>— Moderate to low vehicle speeds</li> <li>— Stationary vehicles alongside the carriageway</li> <li>— Through and local traffic</li> <li>— Moderate traffic generation from abutting properties</li> </ul>	
Sub-arterial or principal roads which connect arterial or main roads to areas of development within a region, or which carry traffic directly from one part of a region to another part	<ul style="list-style-type: none"> <li>— Mixed vehicle and pedestrian traffic</li> <li>— Moderate traffic volume</li> <li>— Low pedestrian volume</li> <li>— Moderate to low vehicle speeds</li> <li>— Low traffic generation from abutting properties</li> </ul>	V4* or V5

\* V4 is the minimum category recommended for application in New Zealand.

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Appendix 3



NOTE: Selection of the lighting category for a road/area should be made by the use of Tables 1.1 to 1.5, as applicable, for Category P installations; and by reference to AS/NZS 1158.1.1 for Category V installations.

FIGURE 1.1 ILLUSTRATION OF ROAD/AREA TYPES AND INDICATIVE LIGHTING CATEGORIES

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Appendix 4

**WINGECARRIBEE SHIRE COUNCIL – LIGHTING DESIGN BRIEF**

Council File Number: \_\_\_\_\_  
 Location of Work: \_\_\_\_\_  
 Description of Works: \_\_\_\_\_

**LIGHTING CATEGORY** (Applicant to circle appropriate standard)

Area	Lighting Category						Council Agreement
	N/A	V1	V2	V3	V4	V5	
1 Vehicular Traffic Lighting	N/A	V1	V2	V3	V4	V5	
2 Pedestrian Area Lighting							
a Collector or non-arterial roads	N/A			P3	P4		
b Local Roads and streets	N/A			P3	P4		
c Common Areas	N/A			P3	P4	P5	
3 Pathways	N/A	P1	P2	P3	P4		
4 Public Activity Areas							
a Pedestrian Use	N/A	P6	P7	P8			
b Transport Terminal	N/A	P6	P7	P8			
5 Connecting Elements	N/A	P9	P10				
6 Carparks	N/A	P11	P12				
7 Other	N/A						

**LIGHTING EQUIPMENT**

Proposed Luminaire type: \_\_\_\_\_

Proposed Column type: \_\_\_\_\_

Column (circle proposal) : Unpainted  Painted  Colour: \_\_\_\_\_

Any special lighting considerations? \_\_\_\_\_

(near airstrips, glare reduction, village area, rural etc) \_\_\_\_\_

Any known future developments or other factors that may influence lighting design ? \_\_\_\_\_

Consultant: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Council Officer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Appendix 5

Annexure 11  
Approved Lighting Equipment - Luminaires

Lamp Type	Description	Manufacturer	Manufacturers Part No.	Table	Integral Energy Stock Code	Design Lumens	Max Maint Factor.	Notes
	Standard Minor Road - 25NB pipe spigot							
F2x14	Greenstreet 2x14watt T5 cw lamps no PEC	Pierlite	GS214WH				0.7	
F2x14	Greenstreet 2x14watt T5 cw lamps no PEC	Pierlite	GS224WH				0.7	
F2x24	Greenstreet 2x14watt T5 cw lamps & D2 PEC	Pierlite	GS214PEWH				0.7	
F2x24	Greenstreet 2x24watt T5 cw lamps & D2 PEC	Pierlite	GS224PEWH				0.7	
M80	Urban Low Glare 80watt MBF cw D2 PECB	Sylvania	JA10H09	202219	1546175	1750	0.7	
M80	Urban 80watt MBF cw D2 PECB	Sylvania	JA11H09	201045	1015620	3600	0.7	
M80	Optima 80watt MBF cw D2 PECB	Rexel		L120		3800	0.7	
S70	Urban 70 watt HPS cw D2 PECB	Sylvania	JA41H09	201145	1082942	5500	0.7	
S100	Urban 100 watt HPS cw D2 PECB	Sylvania	JA47183	97528	1040483	9500	0.7	
MH100	Urban 100 watt HPS cw D2 PECB	Sylvania	JA47183	97528	1040483	7500	0.6	Use E40 to E27 reducer
	Standard Major Road - 32NB pipe spigot							
S100	Optispan 100watt HPS (No PECB)	Rexel	OPN100SIE					
S150	Roadster 150 watt HPS cw PECB	Sylvania	PR42G35	98370	1540491	14000	0.7	
MH150	Roadster 150 watt HPS cw PECB	Sylvania	PR42G35	201016	1540491	11500	0.6	Use E40 to E27 reducer
S150	Optispan 150watt HPS (No PECB)	Rexel	OPN150SIE	L1244		14000	0.7	
MH150	Optispan 150watt HPS (No PECB)	Rexel	OPN150SIE			11500	0.6	Use E40 to E27 reducer
S250	Roadster 250 watt HPS cw PECB	Sylvania	PRG43G35	98354	1540517	28000	0.7	
MH250	Roadster 250 watt HPS cw PECB	Sylvania	PRG43G35			18000	0.6	
S250	Optispan 250watt HPS (No PECB)	Rexel	OPN250SIE	L827		28000	0.7	
MH250	Optispan 250watt HPS (No PECB)	Rexel	OPN250SIE			18000	0.8	
S400	Roadster 400watt HPS cw PECB	Sylvania	PRG44G35	98382	SI25988	47000	0.7	
S400	Optispan 400watt HPS (No PECB)	Rexel	OPN400SIEW	L158		47000	0.7	
	Aeroscreen Minor Road - 25NB pipe spigot							
M80	Optima Aeroscreen 80watt MBF (No PECB)	Rexel		L129		3600	0.7	
M80	Urban Aeroscreen 80watt MBF cw D2 PECB	Sylvania	JA11H09C	85635	1542703	3600	0.7	
	Aeroscreen Major Road - 32NB pipe spigot							
S150	Optispan Aeroscreen 150watt HPS (No PECB)	Rexel	OPN150SAEIEW	L185	1540509	14000	0.7	
MH150	Optispan Aeroscreen 150watt HPS (No PECB)	Rexel	OPN150SAEIEW		1540509	11500	0.6	Use E40 to E27 reducer
S250	Optispan Aeroscreen 250watt HPS (No PECB)	Rexel	OPN250SAEIEW	L168	1540525	28000	0.7	
MH250	Optispan Aeroscreen 250watt HPS (No PECB)	Rexel	OPN250SAEIEW	L248	1540525	18000	0.6	
S400	Optispan Aeroscreen 400watt HPS (No PECB)	Rexel	OPN400SAEIEW	L174	1541182	48000	0.7	
MH400	Optispan Aeroscreen 400watt HPS (No PECB)	Rexel	OPN400SAEIEW	L245	1541182	32000	0.6	
	Standard Post Top Luminaires							
M80	B200180watt MBF cw D2 PECB painted green	Sylvania	D11H18	98232	1011553	3600	0.7	
	Floodlights							
S250	FL42 250watt HPS - Narrow Beam	WE-EF	FL42-T-250N(E)	50198-1	1502012	28000	0.7	
MH250	FL42 250watt MH - Narrow Beam	WE-EF	FL42-T-250H(E)	50198-1	1502012	18000	0.6	
S400	FL42 400watt HPS - Narrow Beam	WE-EF	FL42-T-400N(E)	50198-1	1501988	48000	0.7	
MH400	FL42 400watt MH - Narrow Beam	WE-EF	FL42-T-400H(E)	50198-1	1501988	32000	0.6	

Revised 04/04/03 WH