Melton City Council

Public Lighting Guidelines: In Road Reserves

Melton City Council

Version Number	Date	Approved by	Position
1.4	August 2012	Voltaire David	Infrastructure Planning Co-ordinator
1.5	July 2014	Voltaire David	Infrastructure Planning Co-ordinator
2.0	October 2017	Voltaire David	Infrastructure Planning Co-ordinator

Contents

1. Introduction

The intent of this document is to provide guidance to designers and the land development industry regarding the requirements for public lighting within road reserves as well as submission processes in Melton City Council. With the growing number of decorative public lighting fittings available, it is Council's role to manage and approve these assets with the purpose of providing an increased amenity value to the community whilst minimising the cost impost associated with maintenance of these Council owned assets.

Council is also required to nominate a public lighting category for all installations and assess public lighting plans to ensure there is adequate illuminance and luminance to meet the needs of all road users whilst taking into account the different land uses adjoining the road reserve.

Lowering greenhouse gas emissions associated with public lighting is a key driver both for Council and the land development industry and therefore the most energy efficient lamps and designs are encouraged.

Council's Non Standard Public Lighting Fittings – Subdivision Approvals Policy and Australian Standards (AS 1158) as well as other documents referred to in Section 2.0 must be considered in conjunction with these guidelines.

2. Document Hierarchy

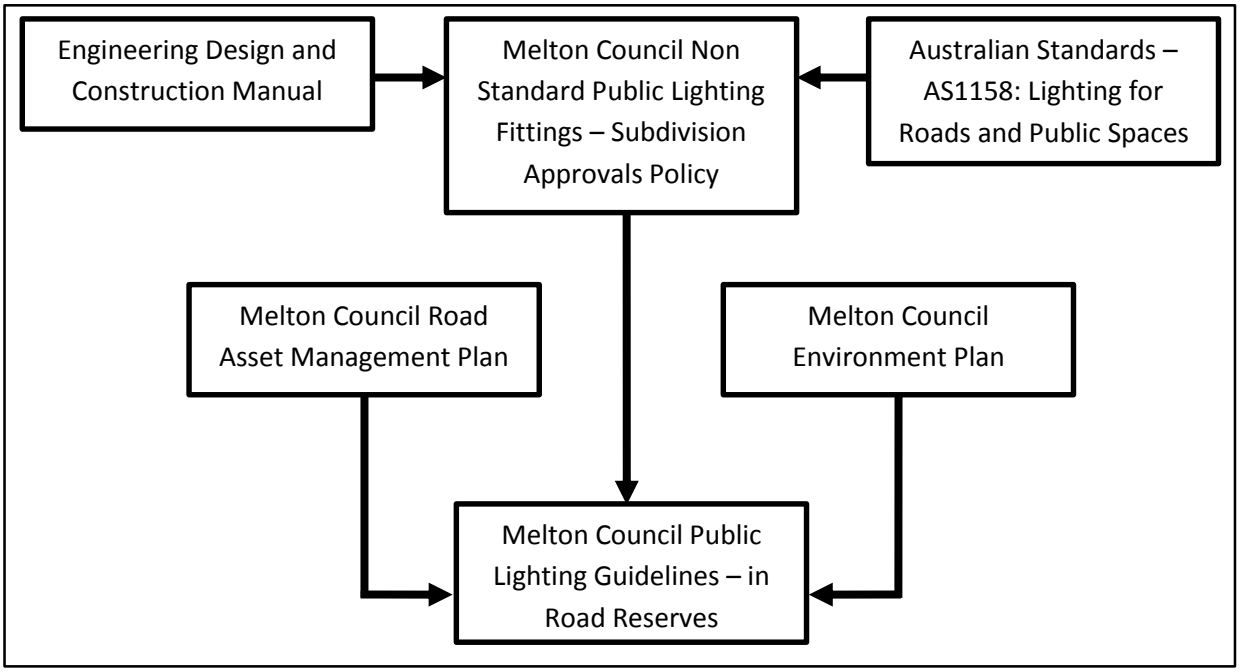


Figure 1: Document Hierarchy

3. Public Lighting Components

Public lighting in local and sub-arterial roads contain fundamentally the same basic components as shown in figure 2.

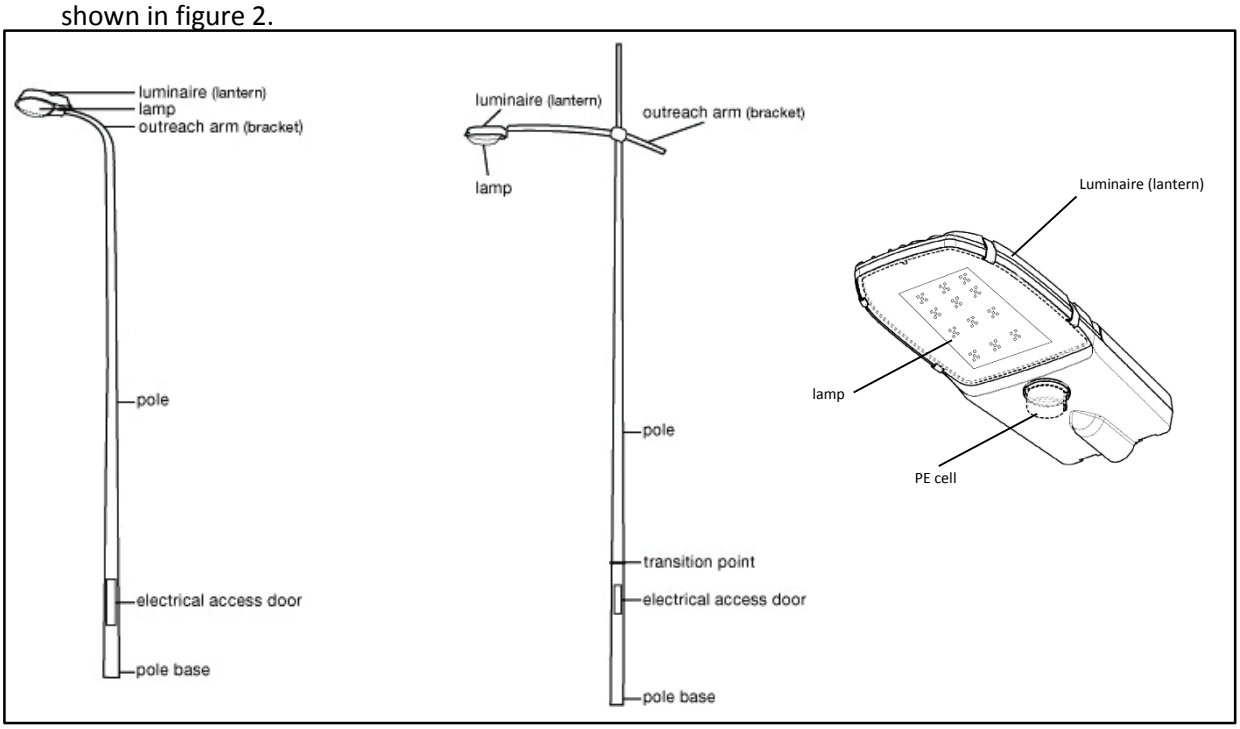


Figure 2: Public Lighting Components

3.1. Types of Luminaires and Lamps

The type of lamp and luminaire must comply with Melton Council's current Non Standard Public Lighting Fittings – Subdivision Approvals Policy.

For all public lighting, Council requires relevant Electrical Distribution Business (EDB) approved LED luminaires to be installed. Where the EDB does not have the appropriate LED luminaires in their standard range, the use of EDB approved energy efficient lamps may be used with the consent of Council. **All LED luminaires must have a 7 pin NEMA installed.**

Council requires decorative poles, brackets, lamps and luminaires within Major Activity Centres and Local Town Centres nominated in Precinct Structure Plans. The lighting category and extents of these areas must be sought from Council. Decorative components of Lighting must be approved by Council and the relevant Distribution Business prior to submission of plans. All public lighting in these areas must be metered sites.

Table 1: Examples of Approved LED Luminaires and Lamps for General Use

Gerard / Sylvania 14W StreetLED MK II With 7 Pin NEMA (P Category)  ✓	Aldridge 23W Aero P-LED With 7 Pin NEMA (P Category)  ✓
Gerard / Sylvania 70W RoadLED With 7 Pin NEMA (V Category)  ✓	Aldridge 105W Aero V-LED With 7 Pin NEMA (V Category)  ✓

Table 2: Examples of Luminaires and Lamps Disallowed for General Use

Coach Lamp Type Luminaires  ✗	Decorative Type Top or Side Entry Luminaires (With the exception of Town Centres)  ✗

Table 3: Examples of Approved LED Luminaires for Town Centres

WE-EF ASP530 118W LED With 7 Pin NEMA (V Category)  ✓	Vicpole Toorak 16LED With 7 Pin NEMA (P Category)  ✓

3.2 Types of Poles

Table 4: Approved Standard Light Poles

Saferoads Standard URD (P Category)	Saferoads Standard URD (V Category)
	

Table 5: Approved Standard Decorative Light Poles

Saferoads Standard Decorative (P Category)	Saferoads Standard Decorative (V Category)
	

Table 6: Approved Decorative Light Poles

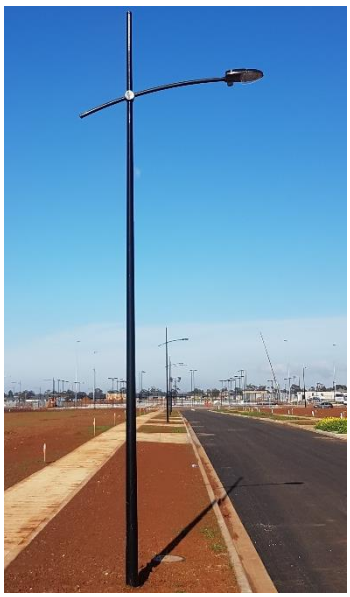
Lincoln	Manningham	Promenade
		

Table 7: Unapproved Decorative Light Poles

Avendon	Terrace	Post Top
		

Table 8: Frangible Light Poles

Slip Base	Energy Absorbing
	

Note: Frangible poles such as slip-based and energy absorbing poles are to be used only on Arterial Roads and Industrial Roads. Slip based poles are only to be used when speed limit is 90km/h and above. Energy absorbing poles are to be used where there is a high level of pedestrian movement (e.g. Major activity centres)

4. Public lighting - P Category in Urban Residential Areas

Table 9: Lighting Requirements for P Category Urban Residential Areas

Description	Selection Criteria			Lighting Category	Minimum Pole height (m)
	Pedestrian/cycle activity	Risk of crime	Need to enhance prestige		
Local Roads – includes Access Streets, Places and Lanes	Medium Low	Low Low	Medium N/A	P3 P4	5.5 5.5

Notes:

- The entire road reserve is to meet appropriate lighting category as shown above, including to the boundary line of extended crossovers.
- Where residential properties are only on one side of the road, public lighting is to be installed on the property side of the road reserve and face away from homes.
- Laneways that only contain a footpath (i.e. no road) are required to light the path to P4 lighting category; footpaths are to have a minimum 0.5m clearance to property boundary to allow for lighting poles to be installed facing away from properties.
- Public lighting design must meet required lighting category with minimum overall wattage. This includes installing lights as close to maximum allowable spacing as practicable and using luminaires with the lowest suitable wattage available.
- When connecting to an existing estate with differing light poles, the previous type of pole is to continue until the end of the street or a significant change such as a roundabout.
- Where public lighting is located near environmentally sensitive areas, spill light to the environmentally sensitive area is to be minimised as much as practicable while maintaining required lighting requirements in the road reserve.

5. Public Lighting – Local Town Centres & Major Activity Centres

Table 10: Lighting Requirements for Local Town Centres and Major Activity Centres

Description	Selection Criteria			Lighting Category	Minimum Pole height (m)
	Pedestrian/cycle activity	Risk of crime	Need to enhance prestige		
Town Centre Roads	High	Low	High	V5	8.5

Notes:

- Town Centre roads require a higher amenity value decorative lighting than surrounding roads, Council is to be contacted in regards to decorative poles and luminaires to be used.
- Public lighting in Local Town Centres and Major Activity Centres must be metered sites. LEDs and 7 Pin NEMAs to be used for all public lighting.
- Public lighting design must meet required lighting category with minimum overall wattage. This includes installing lights as close to maximum allowable spacing as practicable and using luminaires with the lowest suitable wattage available.

- Where public lighting is located near environmentally sensitive areas, spill light to the environmentally sensitive area is to be minimised as much as practicable while maintaining required lighting requirements in the road reserve.

6. Public lighting – V Category in Urban Areas

Table 11: Lighting Requirements for V Category Urban Areas

Description	Lighting Category	Minimum Pole height (m)
Arterial Roads	V3	8.0
Trunk Connector Roads (7000 – 12000 vpd)	V3	8.0
Connector Roads (< 7000 vpd)	V5	8.0

Notes:

- Where a V Category road has a residential area on one side of the road reserve and an industrial area on the other side, public lighting poles are to be energy absorbing, with an appropriate bracket to match nearby residential streets, painted black.
- The carriageway width of V Category roads includes bike lanes; parking lanes do not need to meet lighting requirements.
- Principal arterial roads are to be galvanised energy absorbing poles, Secondary arterial roads are to have decorative poles when adjoining Town Centres.
- Public lighting design must meet required lighting category with minimum overall wattage. This includes installing lights as close to maximum allowable spacing as practicable and using luminaires with the lowest suitable wattage available.
- When connecting to an existing estate with differing light poles, previous pole to continue until the end of the street.
- Where public lighting is located near environmentally sensitive areas, spill light to the environmentally sensitive area is to be minimised as much as practicable while maintaining required lighting requirements in the road reserve.

7. Public lighting - Industrial Areas

Table 12: Lighting Requirements for Industrial Areas

Description	Lighting Category	Minimum Pole height (m)
Industrial Trunk Connector Roads (7000 – 12000 vpd)	V3	8.0
Industrial Connector Roads (< 7000 vpd)	V5	8.0
Industrial access street	V5	8.0

Notes:

- Standard galvanised energy absorbing poles are to be used in industrial areas.
- Where a road has industrial properties on one side, and residential properties on the other, energy absorbing poles to be used with bracket to match residential area, pole and bracket to be painted to match residential.
- Public lighting design must meet required lighting category with minimum overall wattage. This includes installing lights as close to maximum allowable spacing as practicable and using luminaires with the lowest suitable wattage available.
- Where public lighting is located near environmentally sensitive areas, spill light to the environmentally sensitive area is to be minimised as much as practicable while maintaining required lighting requirements in the road reserve.

8. Important Figures from AS1158 – Lighting for Roads and Public Spaces

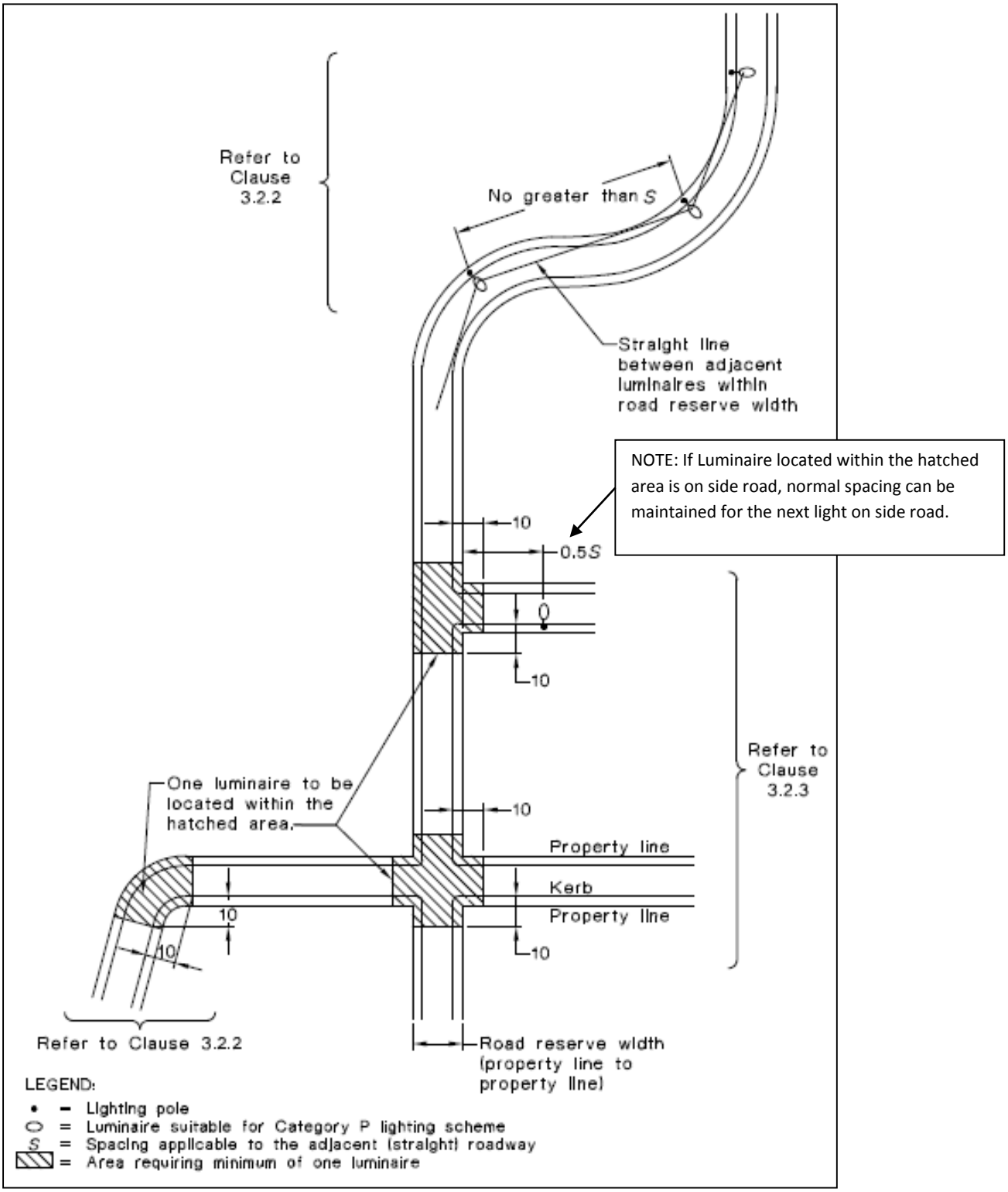


Figure 3 – Requirements Regarding Locations of Luminaires on Curves and at Intersections (AS1158.3.1, Figure 3.1)

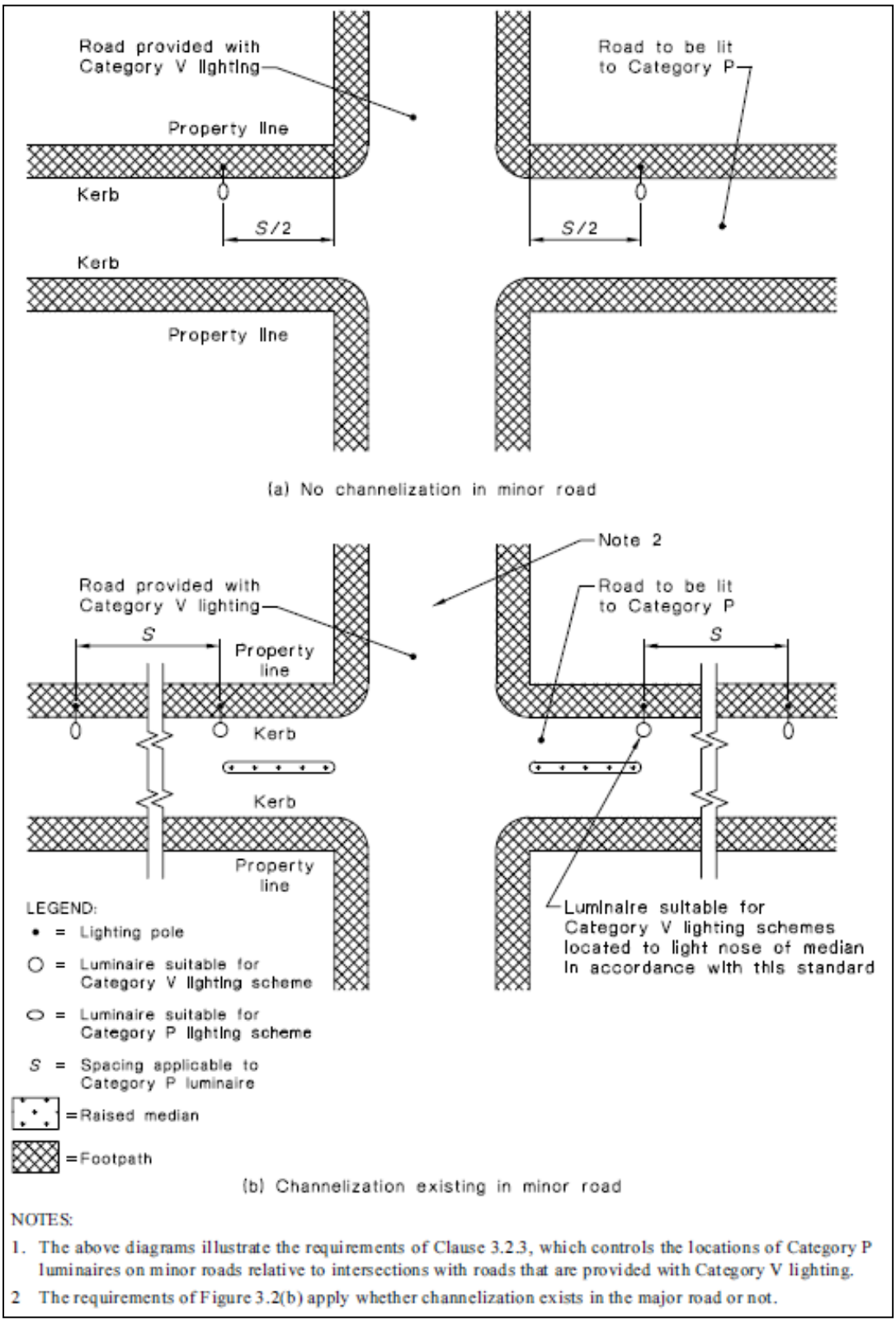


Figure 4 – The Location of Luminaires on Category P Roads Relative to Intersections with Roads Illuminated to Category V (AS1158.3.1, Figure 3.2)

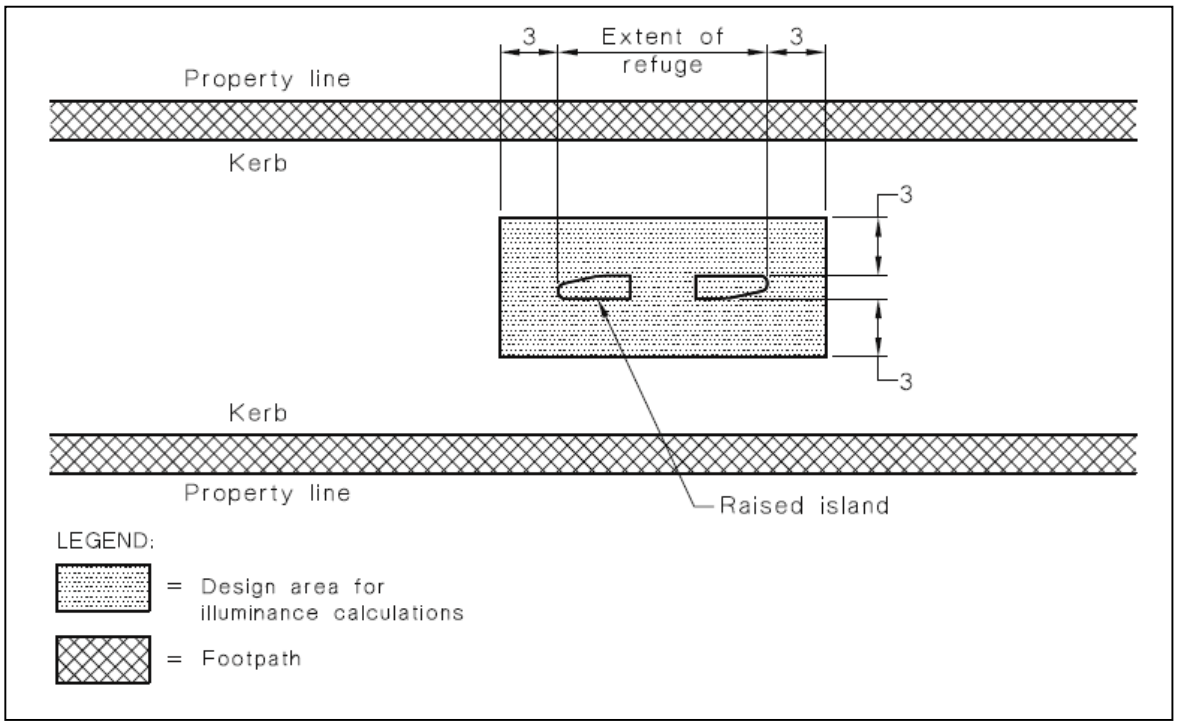


Figure 5 – Minimum Design Area for Isolated Pedestrian Refuges (AS1158.1.1, Figure 3.11)

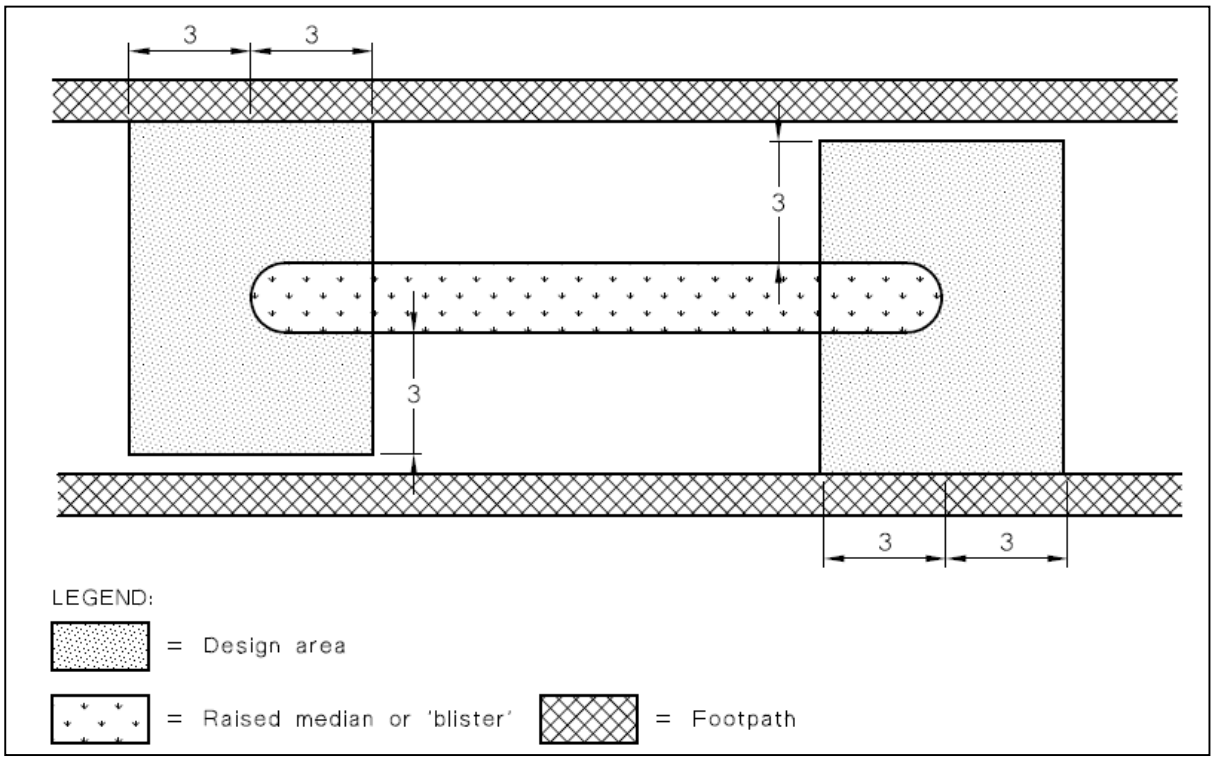


Figure 6 – Minimum Design Area for Illuminance Calculations for Raised Medians (AS1158.3.1, Figure 3.8)

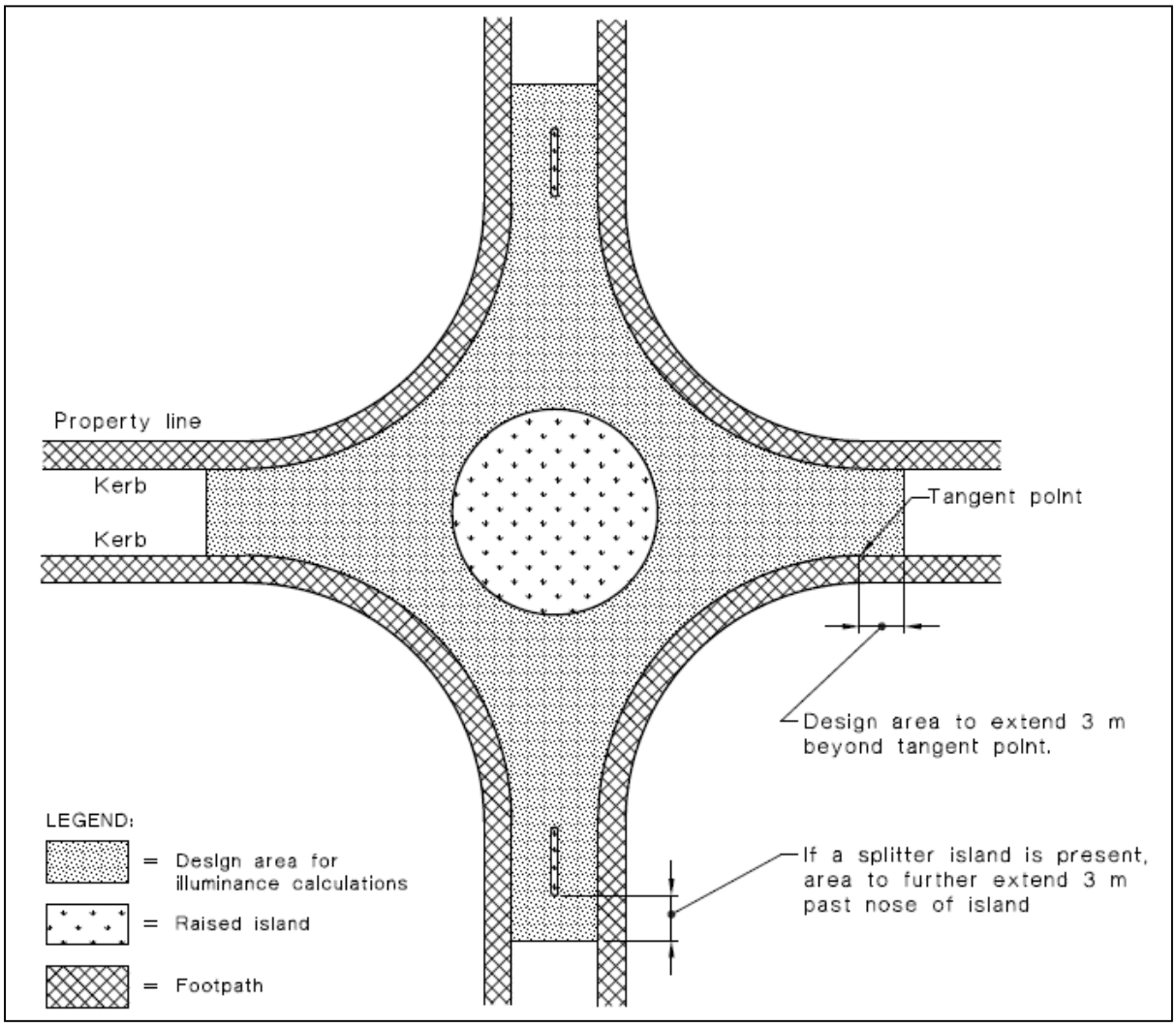


Figure 7 – Minimum Illuminance Calculation Design Area for Roundabouts (AS1158.3.1, Figure 3.7)

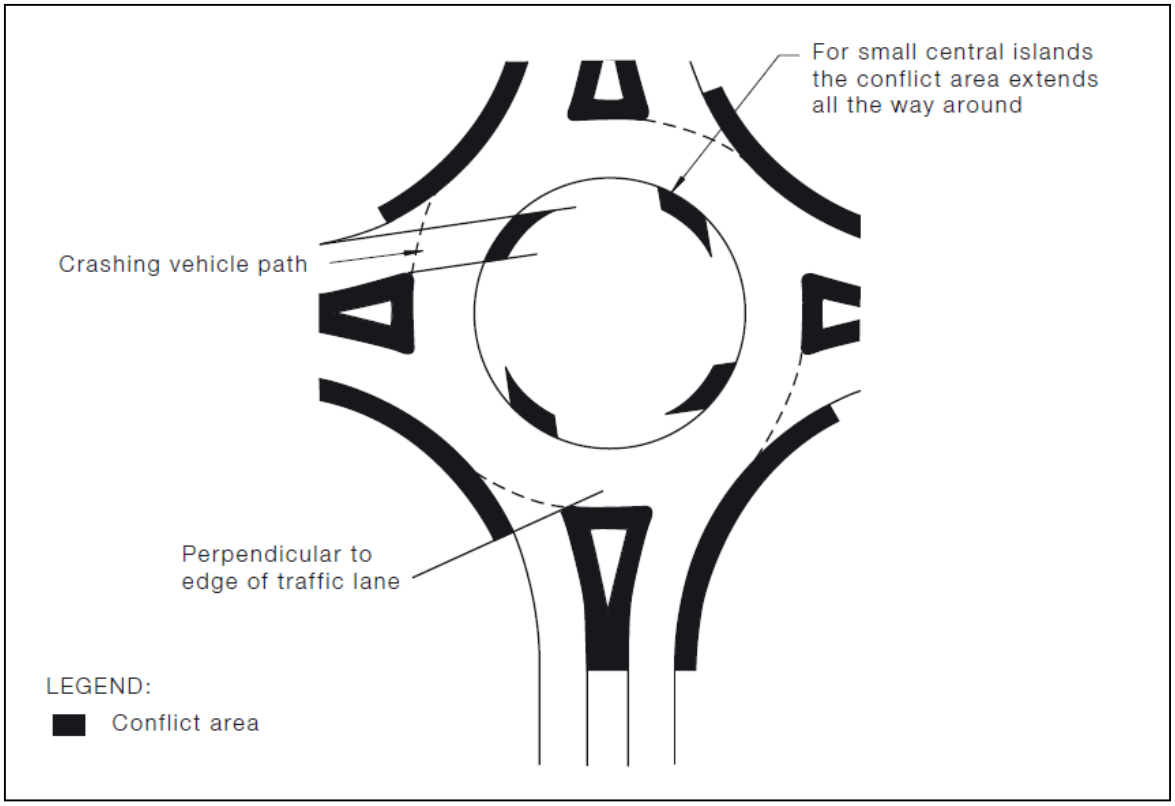


Figure 8 – Conflict Areas in Roundabouts (AS1158.1.2, Figure 8.2)

Note: One of the safest locations for public lighting poles is on the central island of the roundabout. However, roundabouts can be lit from the outside provided the poles are located outside the conflict areas and set back at least 3m from the kerb. If poles must be located in a conflict area, pole is to be energy absorbing.

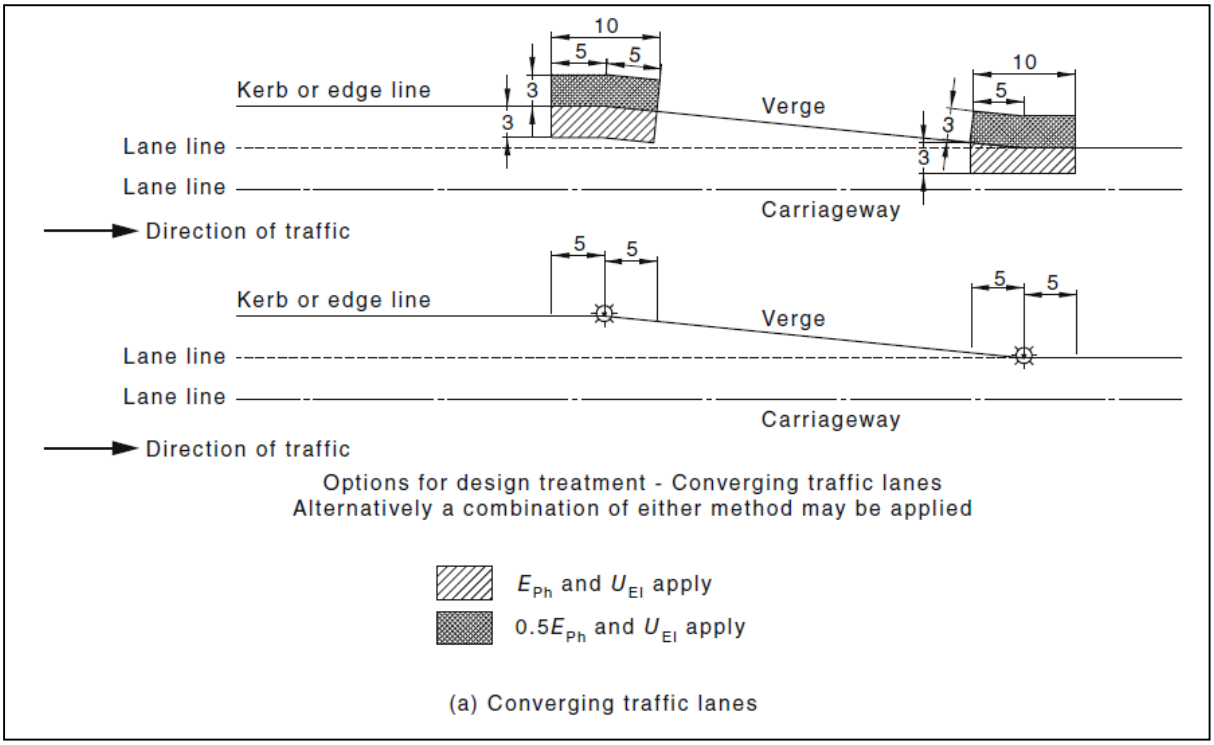


Figure 9 – Typical Minimum Design Areas for Converging Traffic Lanes (AS1158.1.1, Figure 3.2(a))

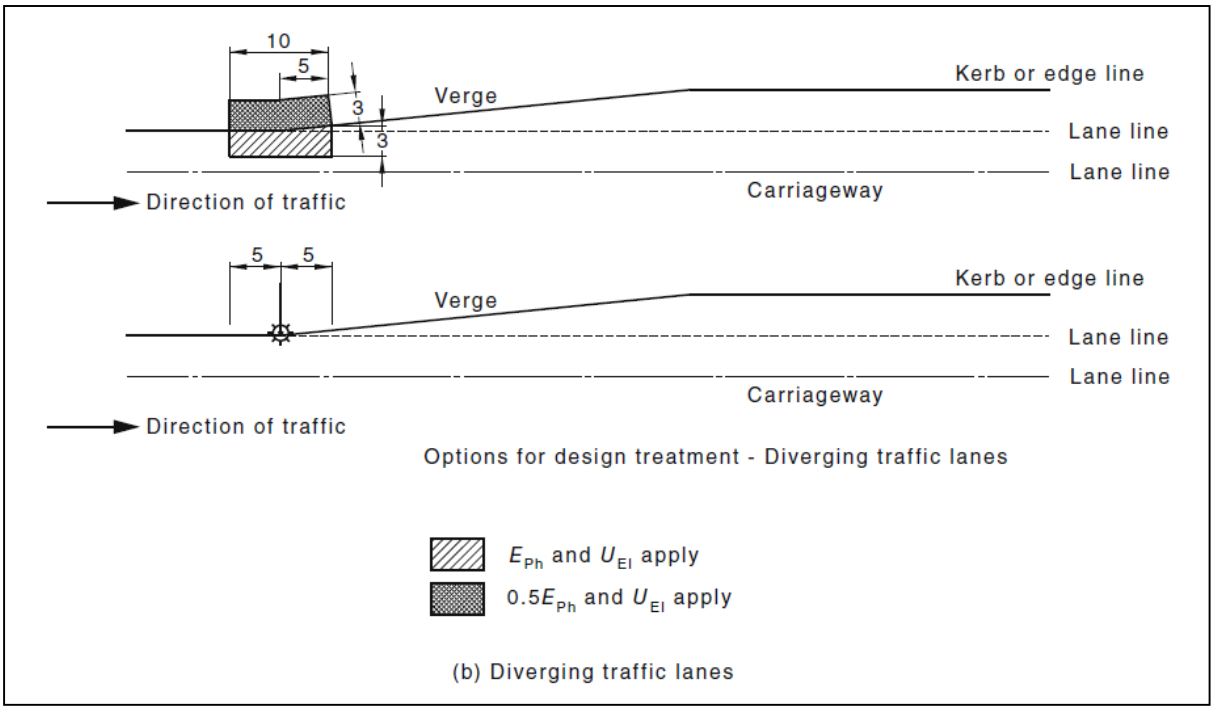


Figure 10 – Typical Minimum Design Areas for Diverging Traffic Lanes (AS1158.1.1, Figure 3.2(b))

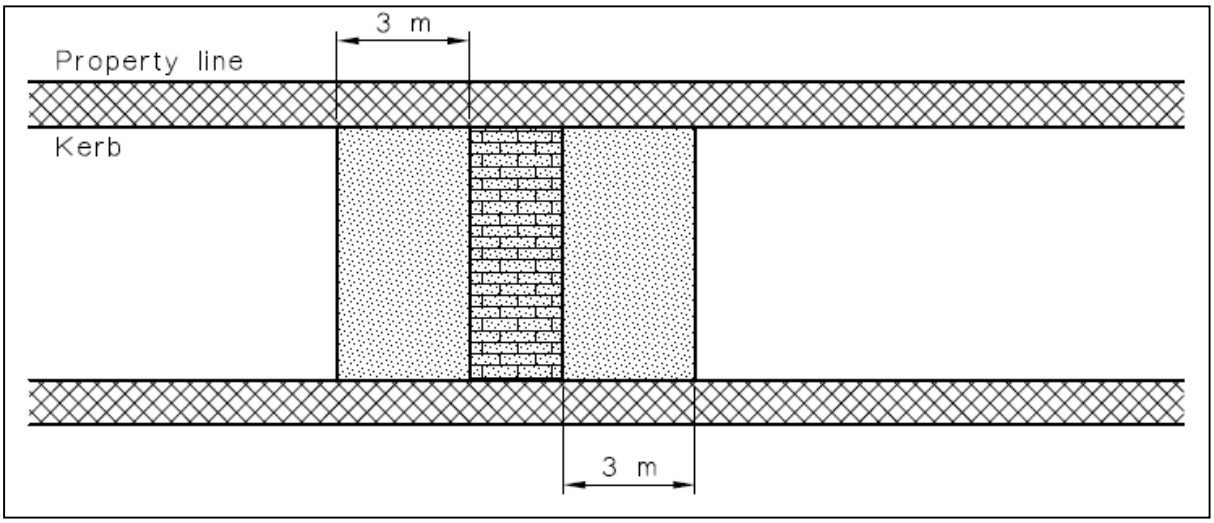


Figure 11 – Illuminance Calculation Design Area for Full Width Road Hump (AS1158.3.1, Figure 3.9(a))

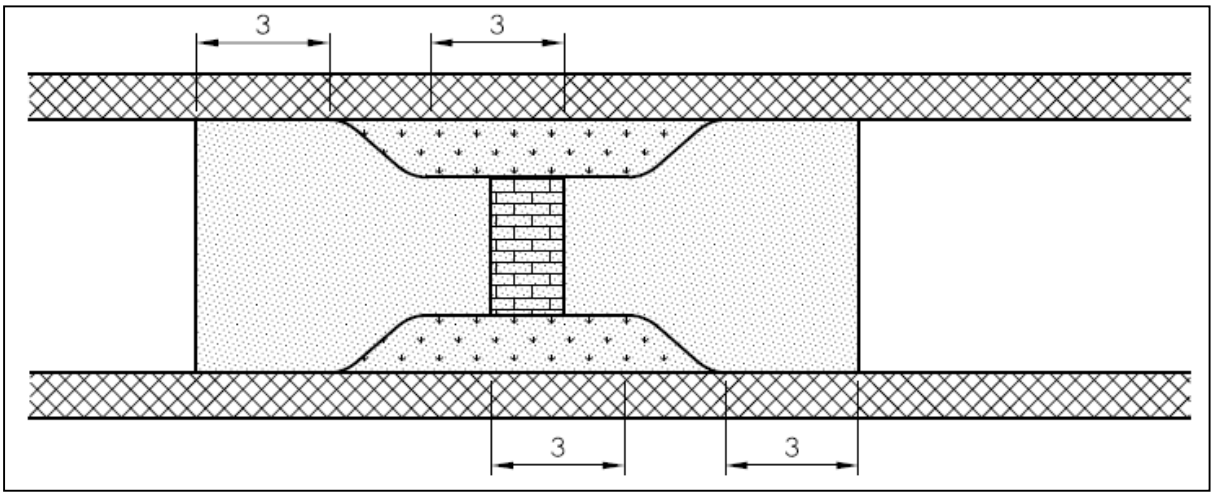


Figure 12 – Illuminance Calculation Design Area for Road Hump with Kerb Extensions (AS1158.3.1, Figure 3.9(b))

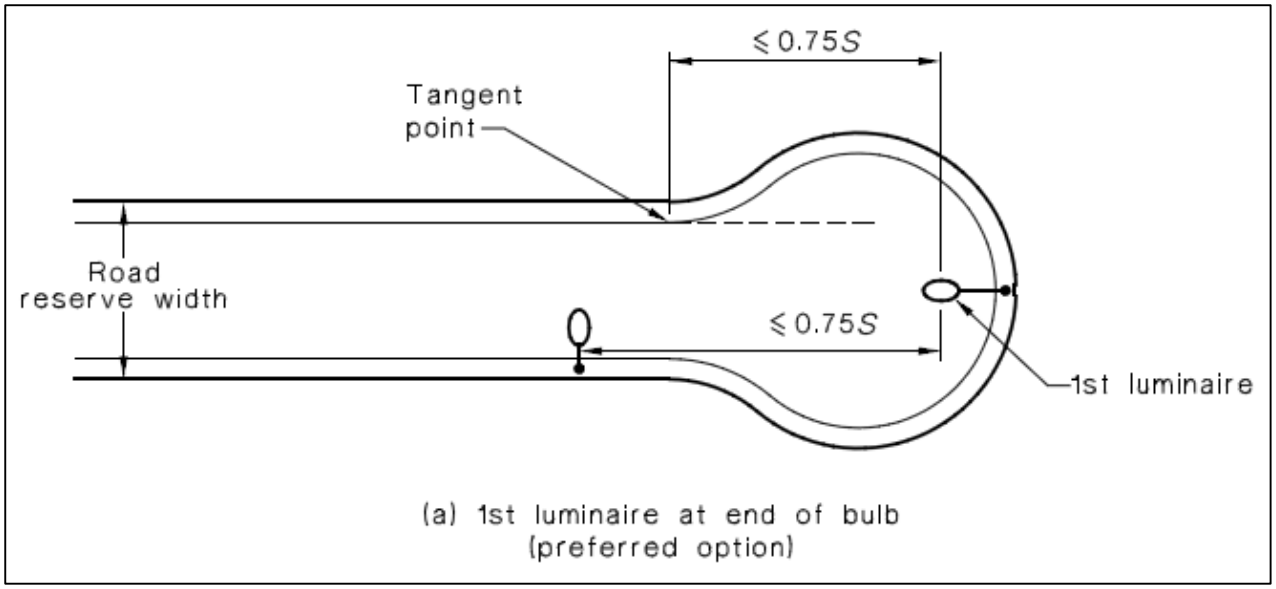


Figure 13 – Locations of Luminaires in Bulb-Type Cul-De-Sacs (Preferred Option) (AS1158.3.1, Figure 3.4(a))

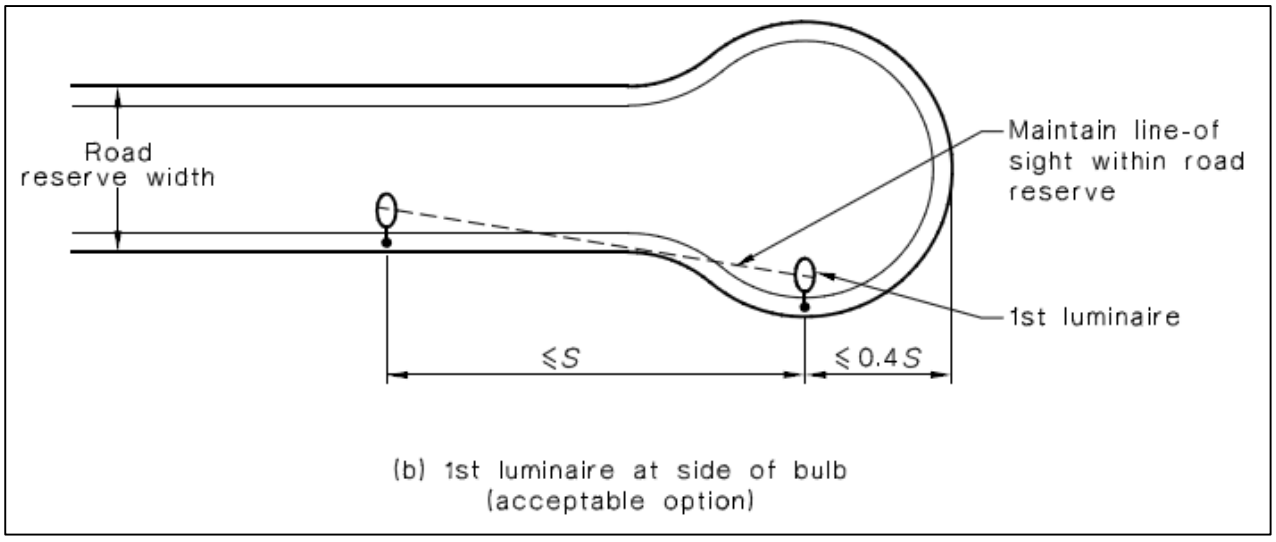


Figure 14 – Locations of Luminaires in Bulb-Type Cul-De-Sacs (Acceptable Option) (AS1158.3.1, Figure 3.4(b))

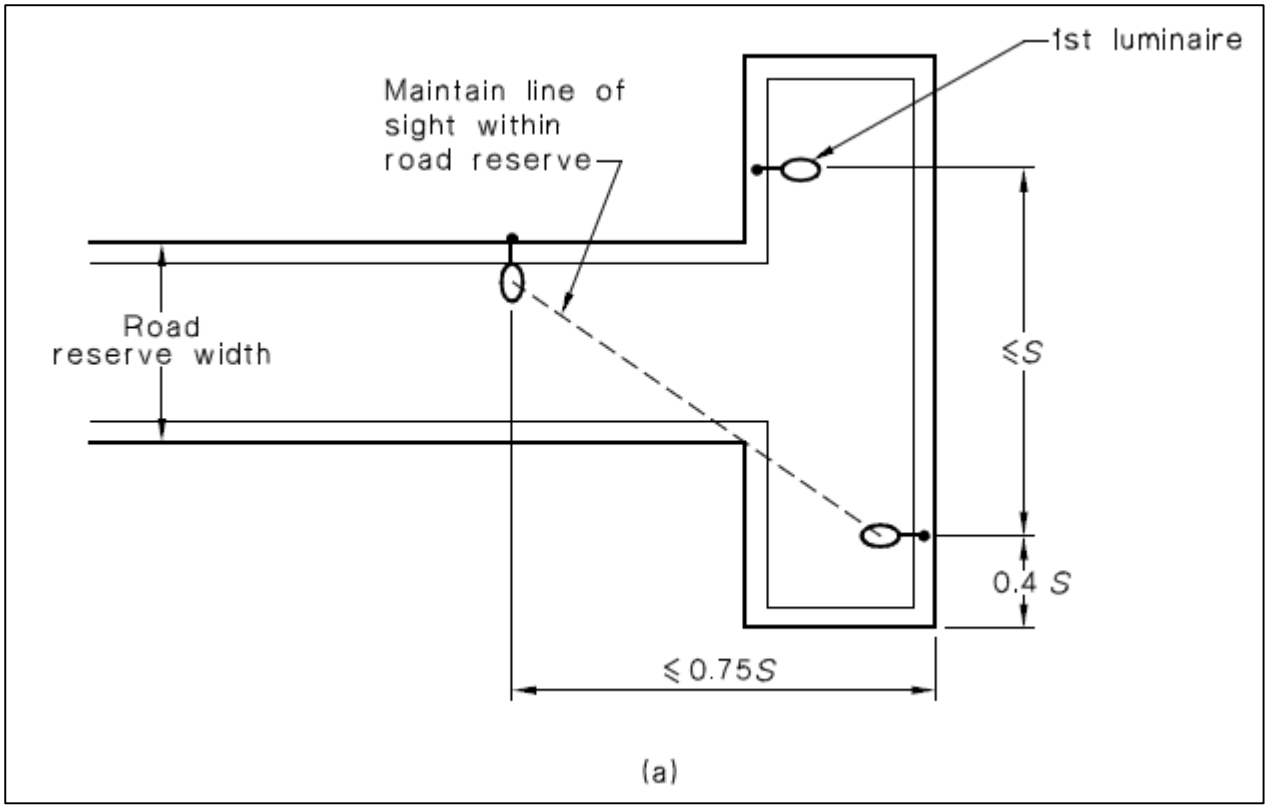


Figure 15 – Locations of Luminaires in Tee-Type Cul-De-Sacs (AS1158.3.1, Figure 3.5(a))

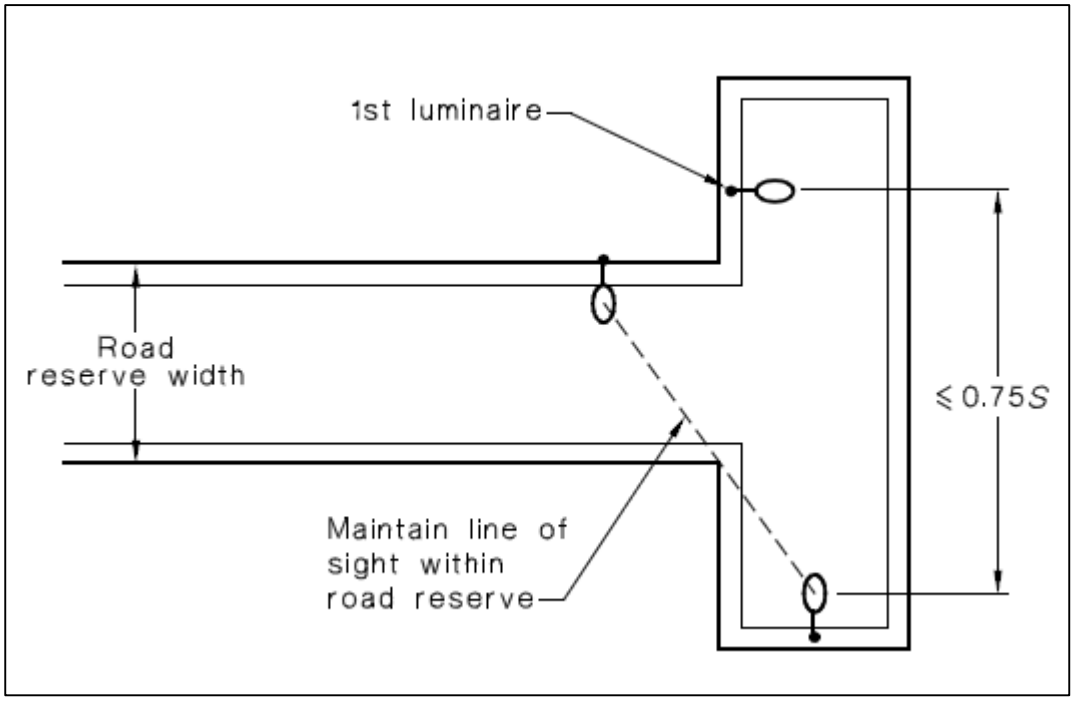


Figure 16 – Locations of Luminaires in Tee-Type Cul-De-Sacs (AS1158.3.1, Figure 3.5(b))

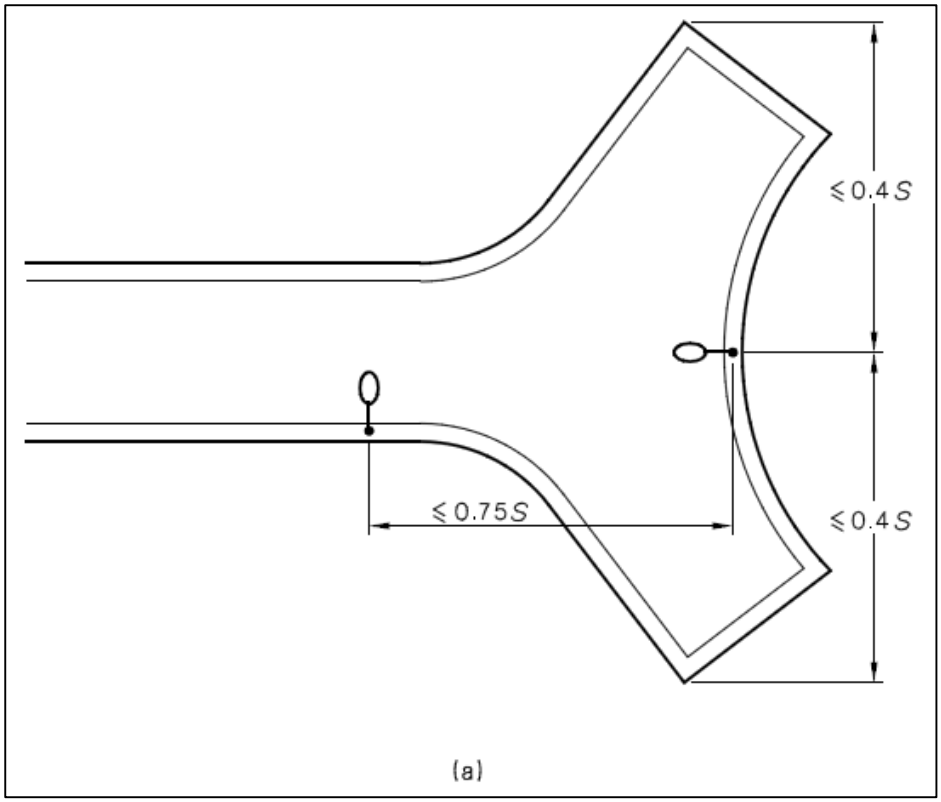


Figure 17 – Locations of Luminaires in Y-Type Cul-De-Sacs (AS1158.3.1, Figure 3.6(a))

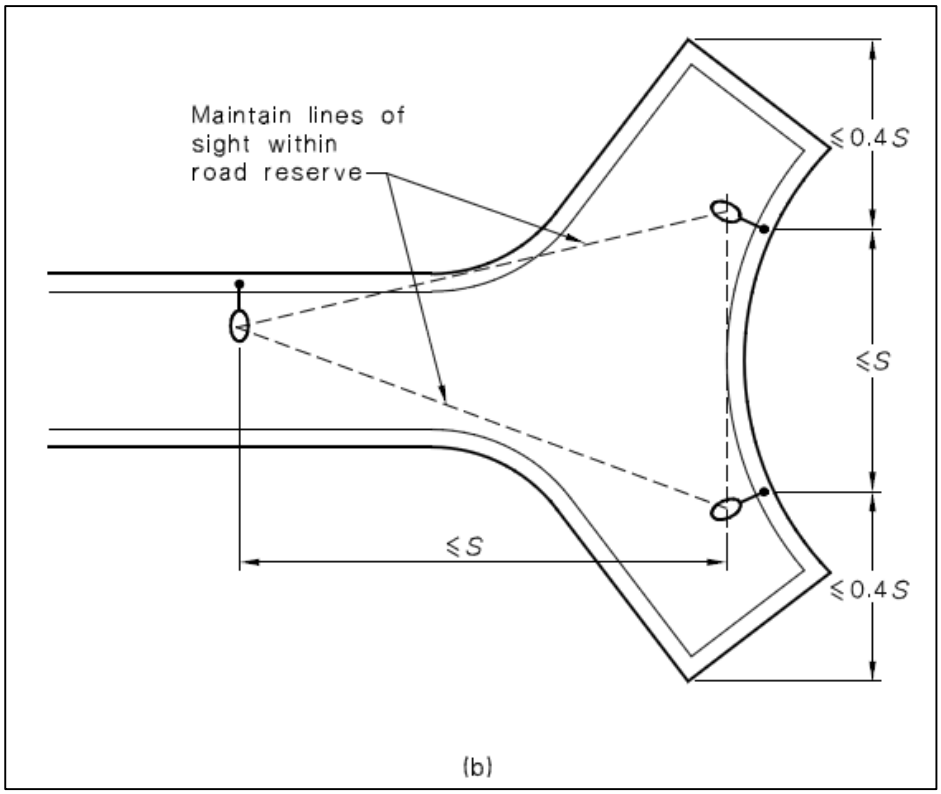


Figure 18 – Locations of Luminaires in Y-Type Cul-De-Sacs (AS1158.3.1, Figure 3.6(b))

9. Location of public lighting poles in urban standard roads

- Public lighting poles are to be located a minimum 1m from back of kerb (800mm clearance from outer edge of pole to back of kerb)

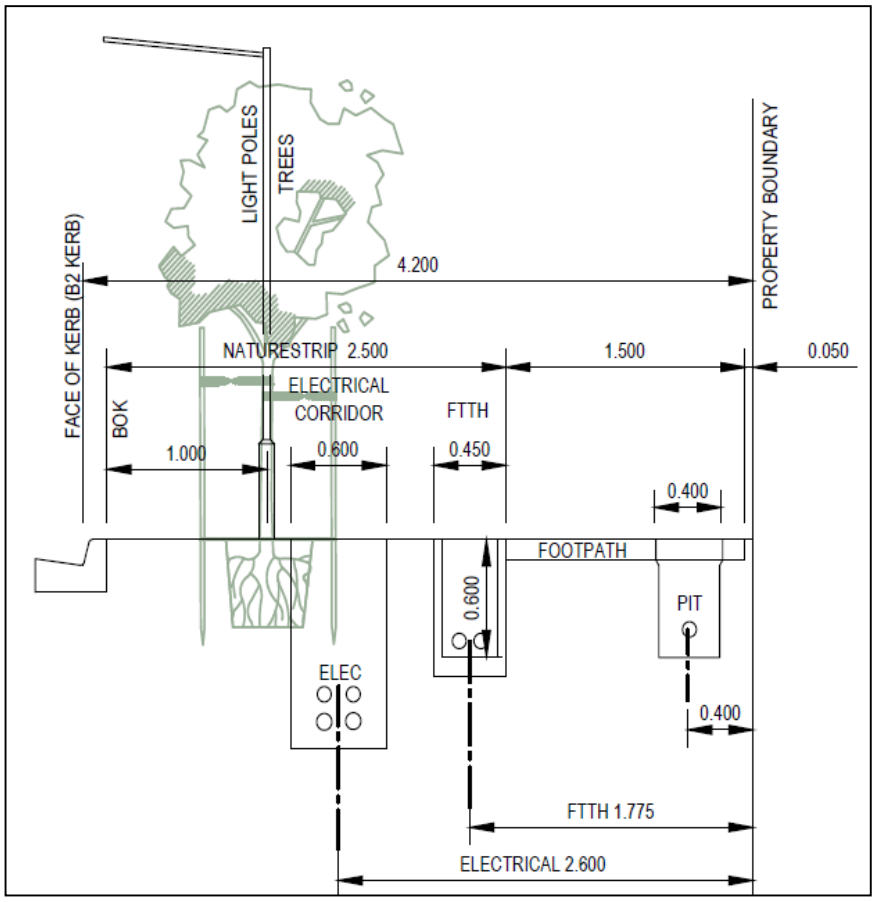


Figure 19 – Typical Location for Lighting Pole and Other Services (Engineering Design and Construction Manual for Subdivision in Growth Areas, Figure 004)

- Public lighting poles must not be located within indented parking bays

Figure 20 – Light Pole Installed Clear of Parking Bay

- Public lighting poles must not be located within parking lanes

Figure 21 – Light Pole Installed Clear of Parking Lane

- Public lighting poles must not be located within footpaths and shared paths

Figure 22 – Light Pole Installed Within Footpath

- Public lighting poles must have a minimum 0.5m clearance from shared paths and bicycle paths

Figure 23 – Light Pole Installed Clear of Shared Path

- Public lighting poles must be located near the mid-point of a lot frontage to ensure adequate clearance from vehicle crossings (2m – desirable; 1m - minimum).

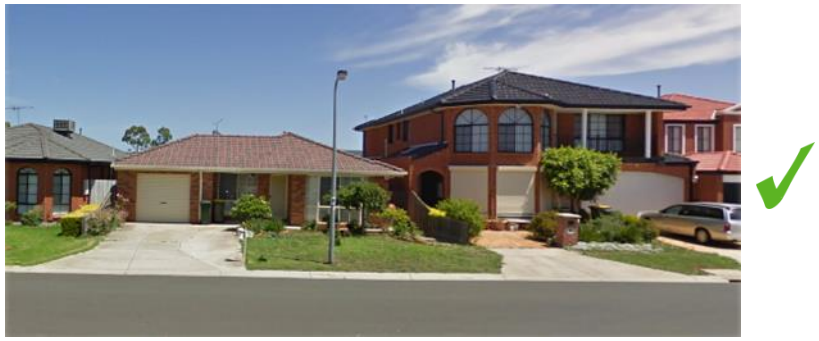


Figure 24 –Light Pole Installed Near Centre of Property

- Public lighting poles must have 2m desirable (1m minimum) clearance from pram crossings

Figure 25 – Light Pole Installed Clear of Pram Crossing

10. Public lighting for Rural Roads & Isolated Intersections

Melton Council will need to be contacted to determine where public lighting is required for rural roads and isolated intersections. Council will consider each location individually and determine the location of any dedicated public lighting poles, the lighting category and any other requirements. Council will consider the location of the site, traffic volumes, the road environment and any other safety factors to determine the required lighting for each location.

11. Process and responsibility for unmetered public lighting

11.1 Ownership and Management of Standard Unmetered Public Lighting

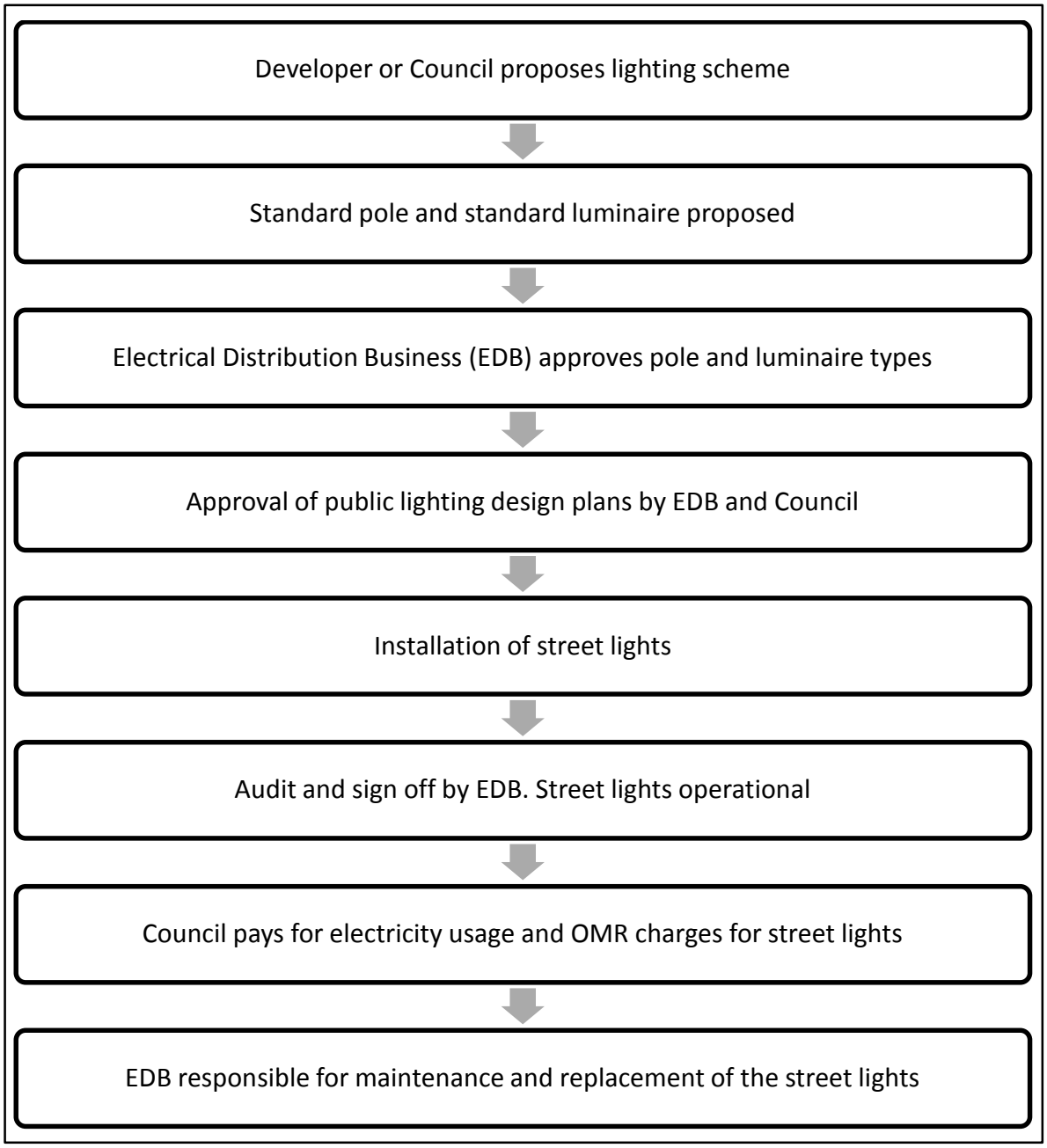


Figure 26 – Ownership and Management of Standard Unmetered Public Lighting

11.2 Ownership and Management of Non-Standard Unmetered Public Lighting

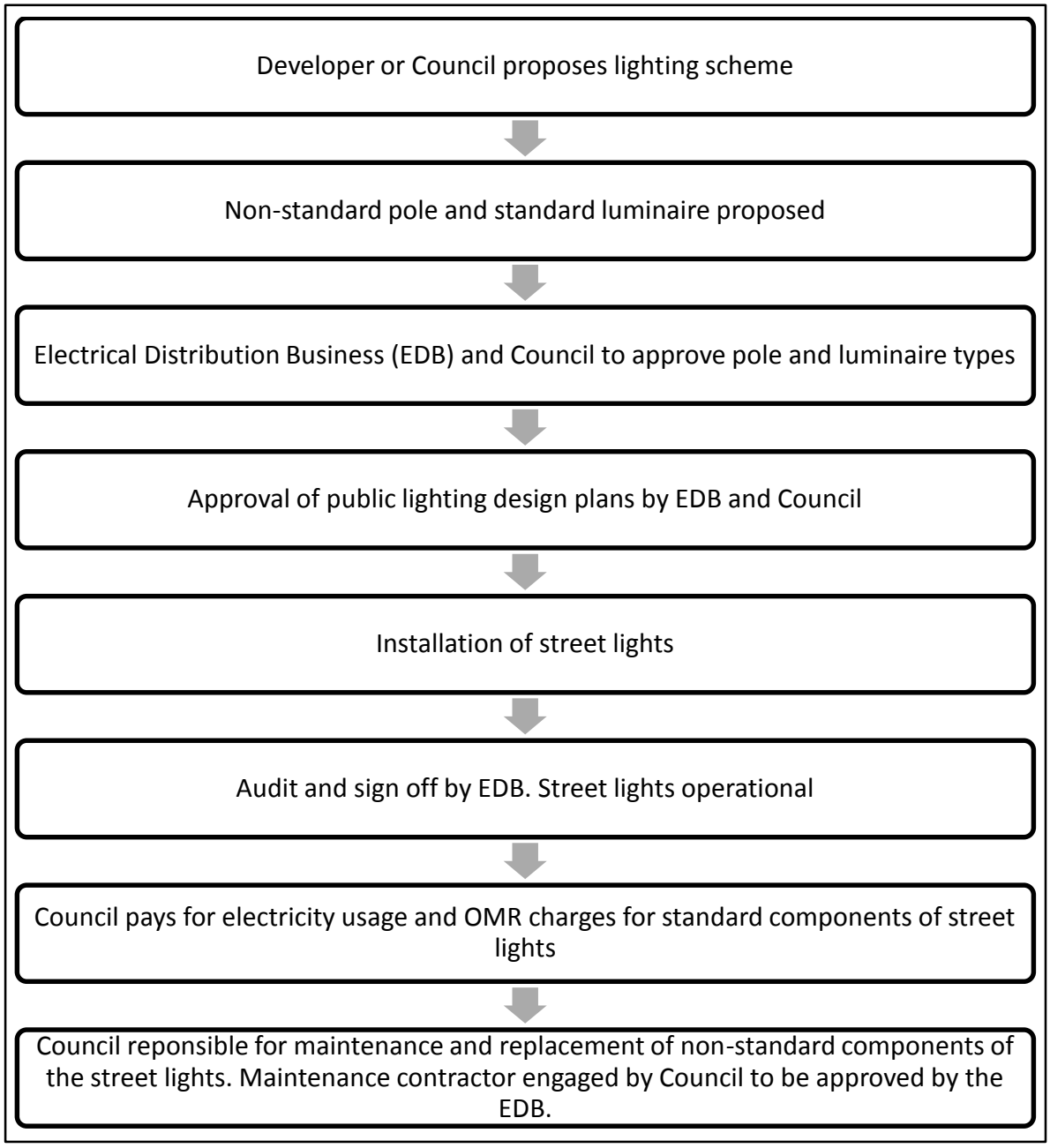


Figure 27 – Ownership and Management of Non-Standard Unmetered Public Lighting

11.3 Ownership and Management of Non-Standard Metered Public Lighting

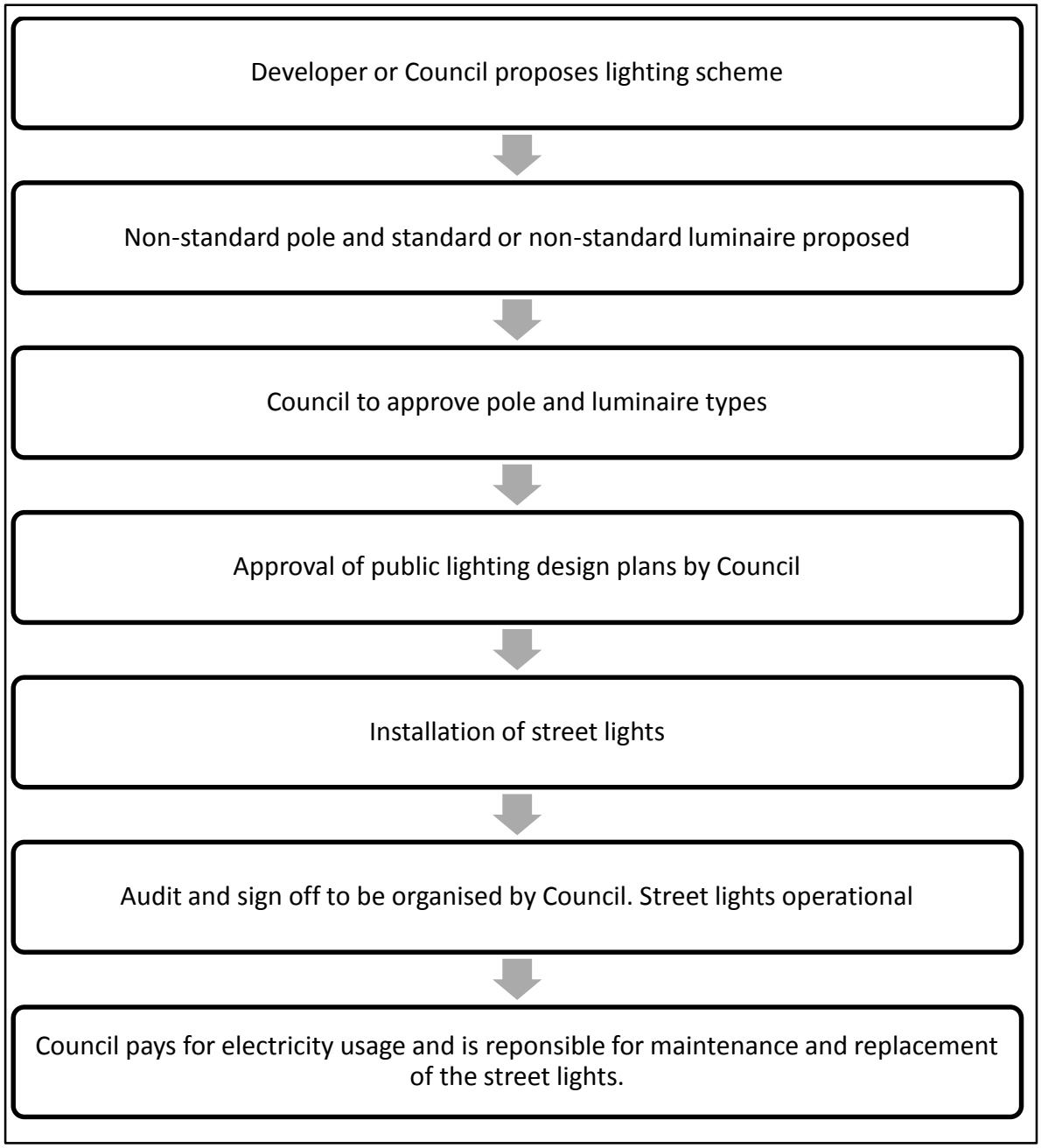


Figure 28 – Ownership and Management of Non-Standard Metered Public Lighting

12. Council Requirements for Public Lighting Plan Submission

- All submissions to Council to be directed to the Infrastructure Planning Coordinator:
  By mail PO Box 21
  Melton 3337

  By email Address to serviceauthority@melton.vic.gov.au
- Completed Melton Council Public Lighting Submission Form (see Appendix A)
- Public lighting plans must be consistent with the approved road and drainage engineering plans, and must provide adequate lighting for the entire stage of subdivision including any ancillary works such as an existing rural road being upgraded to an urban road.
- Layout plan containing public lighting details and relevant isolux diagrams provided
- Designation of lighting category for each street clearly specified
- Relevant spacing tables provided

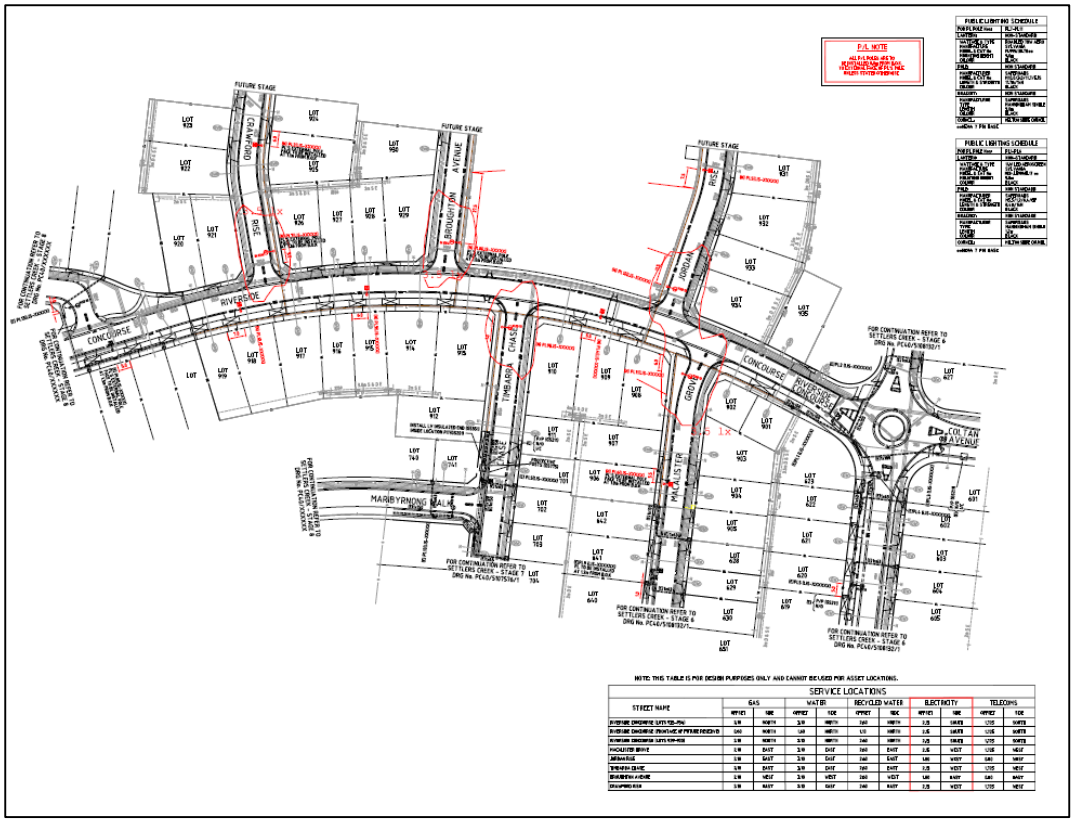


Figure 29 – Public Lighting Plan with 3.5 Lux Diagrams, Public Lighting Schedules, and Pole Offsets

PUBLIC LIGHTING SCHEDULE	
FOR PL POLE Nos:	PL7-PL11
LANTERN:	NON-STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	ROADLED 70W AERO SYLVANIA PL99A15L70** 9.0m BLACK
POLE:	NON STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS M10.0/3.0/11.7/GJS 11.7m/1kN BLACK
BRACKET:	NON STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS MANNINGHAM SINGLE 3.0m BLACK
COUNCIL:	MELTON SHIRE COUNCIL

**NEMA 7 PIN BASE

PUBLIC LIGHTING SCHEDULE	
FOR PL POLE Nos:	PL1-PL6
LANTERN:	NON-STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	14W LED AEROSCREEN SYLVANIA MKII-JLB99A15L17 ** 5.5m BLACK
POLE:	NON STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS M5.5/1.2/8.4/GF 8.4m/1kN BLACK
BRACKET:	NON STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS MANNINGHAM SINGLE 1.2m BLACK
COUNCIL:	MELTON SHIRE COUNCIL

**NEMA 7 PIN BASE

Figure 30 – Public Lighting Schedules

```
@B                    P Category Lighting - AS/NZS 1158.3.1:2005
@B                    ******************************************

@B                                      Vemtec
@B                                      ------

        I-table Filename: C:\Public Lighting\Photometric Data\Sylvania
Stree
                          tLed MKII 14W\Aeroscreen\StreetLED2 14W 4K AERO
21
                          6026.cie

                Job Name: SETTLERS CREEK ESTATE

   Luminaire Description: __________ ___ ___ _____ 216026 use 2068 l
     Lamp Wattage & Type: 14W
       Initial Lamp Flux: 2068 lms
      Maintenance Factor: 0.8
             Stores Code:
           Upcast Angle:  5 degrees
            Arrangement: Single Side
         Offset Distance: 4.6 m
Upward Waste Light Ratio: .0 %
            Light Source: LED - Light Emitting Diode
Luminaire Classification: Not specified

@B       Lighting Category: P4 (Local Area Roads - Tables 2.1 & 2.6)

    Illuminance Criteria:  Average Illuminance (Eav) >= 0.85 lx
    (Maintained values)    Minimum Illuminance (Eph) >= 0.14 lx
                          Illuminance Uniformity (Up) <= 10

        Calculation Grid: 20 x 11 points - Figure 3.7 of AS/NZS 1158.2

@B Mounting                  Maximum Spacing for different
@B Height                         Road Reserve Widths
@B --------                  ----------------------------

          12.0  12.5  13.0  13.5  14.0  14.5  15.0  15.5  16.0  16.5  17.0
      +-------------------------------------------------------------------
-+
  5.5 |  56.5  56.5  56.5  56.5  56.5  56.5  56.5  56.5  56.5  56.5  56.5
|
      +-------------------------------------------------------------------
```

Figure 31 – P Category Spacing Table

RESULTS FOR RUNNING SAASTAN WITH NOMINATED SPACINGS
[AUSTRALIA MODE]

Job name: 108WLED

Luminaire I-table: G:\Street Lighting\Photometric Data\Aldridge\2016 Photometrics\150W equivalent use 11.6kl\Vled 162 1 98W T2 DP12080901B.CIE
Luminaire Description: ALS160 120809-01 R90
Lamp Wattage & Type: 108W LED
Light Source: LED

Stores Code:
Upcast Angle: 5 Degrees
Mounting Height: 10 m
Overhang 1st Row: 2 m
Outreach Size: 3.0
Road Surface: CIE R3
Traffic Flow: Two Way ----> <----

Luminous Flux: 11.6 Klms
Arrangement: 1 Single-Left
Maintenance Factor: 0.8

Lighting Category: V5 **Carriageway Width: 7 m**

Spacing (m)	Traffic Direction	Lbar (>=0.35) or (>=0.38)	Uo (>=0.33) (>=0.31)	Ul (>=0.5) "	UWLR (=<3) "	TI (=<20) "	Esl (>=50) "	Esr (>=50) "	Comply with V5
30.00	Normal	1.57	0.59	0.94	.02	10.68	102.65	86.15	YES
30.00	Oncoming	1.64	0.66	0.94	.02	9.75	86.15	102.65	YES
31.00	Normal	1.52	0.59	0.94	.02	10.77	103.18	86.20	YES
31.00	Oncoming	1.59	0.66	0.94	.02	9.83	86.20	103.18	YES
32.00	Normal	1.47	0.59	0.92	.02	10.88	103.21	86.15	YES
32.00	Oncoming	1.54	0.66	0.94	.02	9.93	86.15	103.21	YES
33.00	Normal	1.43	0.58	0.93	.02	10.97	103.21	85.52	YES
33.00	Oncoming	1.50	0.66	0.93	.02	10.00	85.52	103.21	YES
34.00	Normal	1.39	0.58	0.92	.02	11.08	103.37	85.36	YES
34.00	Oncoming	1.45	0.66	0.94	.02	10.11	85.36	103.37	YES
35.00	Normal	1.35	0.58	0.91	.02	11.18	103.43	85.33	YES
35.00	Oncoming	1.41	0.66	0.94	.02	10.20	85.33	103.43	YES
36.00	Normal	1.31	0.59	0.89	.02	11.37	103.36	85.21	YES
36.00	Oncoming	1.37	0.66	0.92	.02	10.30	85.21	103.36	YES
37.00	Normal	1.28	0.58	0.87	.02	11.48	103.27	85.15	YES
37.00	Oncoming	1.34	0.66	0.90	.02	10.44	85.15	103.27	YES
38.00	Normal	1.24	0.58	0.86	.02	11.52	103.05	85.12	YES
38.00	Oncoming	1.30	0.65	0.89	.02	10.54	85.12	103.05	YES
39.00	Normal	1.21	0.57	0.84	.02	11.65	102.91	85.18	YES
39.00	Oncoming	1.27	0.65	0.87	.02	10.65	85.18	102.91	YES
40.00	Normal	1.18	0.57	0.82	.02	11.77	103.09	85.29	YES
40.00	Oncoming	1.24	0.65	0.85	.02	10.75	85.29	103.09	YES
41.00	Normal	1.15	0.56	0.79	.02	11.90	102.89	85.58	YES
41.00	Oncoming	1.21	0.64	0.84	.02	10.86	85.58	102.89	YES
42.00	Normal	1.12	0.54	0.77	.02	12.04	102.87	85.41	YES
42.00	Oncoming	1.18	0.63	0.81	.02	10.90	85.41	102.87	YES

Figure 32 – V Category Spacing Table

13. Council Requirements for Issuance of the Statement of Compliance

- Copy of the approved public lighting design plans from the relevant Electrical Distribution Business

- Prior to Practical Completion being given for any existing roads, the public lighting must be operational and confirmation must be provided to Council by the relevant Electrical Distribution Business. Otherwise, under the Road Management Act, the developer's contractor must assume the role of the Works Manager and maintain the safety of the existing roads until the public lighting fixtures are operational. The contractor must obtain from Council a "Consent to Work within a Road Reserve" specifically for these works before issuance of Practical Completion.

14. Glossary

Word/Term	Definition
Illuminance	The luminous flux arriving at a surface divided by the area of the illuminated surface
Luminance	The physical quantity corresponding to the brightness of a surface when viewed from a specified direction
Electrical Distribution Business (EDB)	A person or company that holds a licence to distribute and supply electricity granted under the Act.
Council	Melton City Council
AS 1158	Australian Standards – Lighting for roads and public spaces
Public lighting pole	An unmetered light pole that is located within a road reserve
Lamp	The generic term for the light source in a luminaire
Luminaire	An apparatus that distributes, filters or transforms the light transmitted from a lamp.
Public lighting fitting	Comprises the lamp, luminaire, public lighting pole and ancillary components.
Standard Unmetered Public Lighting	Public lighting fitting with the following public lighting components acceptable to a distributor - lamp, luminaire, public lighting pole and ancillary components
Non-standard Unmetered Public Lighting	Public lighting fitting with any of the following public lighting components not acceptable to a distributor – lamp, luminaire, public lighting poles and ancillary components
OMR	Operations, Maintenance and Replacement.
OMR status	Standard public lighting components that come under the responsibility of the distributor for operation, maintenance and replacement.
Arterial road	A road that is classified to provide direct access from one district to another
Connector road	A road that is classified to provide connection through and between neighbourhoods
Local road	A road that is classified to provide local residential access
Precinct Structure Plans (PSP)	Master plans for whole communities which are usually between ten to thirty thousand people. PSP's lay out roads, shopping centres, schools, parks, housing, employment and the connections to transport.
W	Abbreviation for Watts, the measurement of power.

Appendix A: Melton Council Public Lighting Submission Form

New Estate Public Lighting Plans Submission Form	CITY OF MELTON
Development/Subdivision:	
Stage:	
Name of Applicant:	
Applicant's Contact Details:	
Date:	

In line with Council's Engineering Design and Construction Manual Section 6 and 16, this form shall form the basis of a written application to Council requesting approval of water plans associated with estate developments.

Before the public lighting plans are submitted to Council, the corresponding Functional Layout Plans must be approved.

The following documents are required for a public lighting plan submission to be assessed for approval:

Tick Boxes

ITEM	DOCUMENT	YES	N/A
1	Public Lighting Plans (in CAD format, including relevant isolux diagrams)		
2	Relevant Spacing Tables		

Notes:

1. Submission must be in accordance with Council's current Non Standard Public Lighting Fittings – Subdivision Approvals Policy and Public Lighting Guidelines: In Road Reserves, or otherwise directed by Council's engineer.

2. The applicant must allow ten working days from the receipt of the application for a response from Council

3. Submit this form to the email address: serviceauthority@melton.vic.gov.au

4. All resubmissions **must** show an updated revision number and date on plans, and include all relevant documents (E.g. if sheet 2 of 2 of a plan is updated, then the revision number and date of sheet 2 is updated, and both sheets as well as relevant spacing tables are resubmitted)

5. All Service Plans must be approved prior to the approval of Engineering Plans