

# Public lighting designs – submission requirements



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Council takes a comprehensive approach to public lighting, which evaluates all aspects of a design, including: maintainability, operation, functionality, sustainability, impact on residents and design compliance to City Plan and Australian Standards. Consultants may be requested to amend designs to improve these aspects.

Learn more about how to submit your lighting designs at [brisbane.qld.gov.au](https://brisbane.qld.gov.au) and search for “public lighting designs”.

This guide provides information about the requirements you need to meet in your submission, including:

- City Plan requirements
- General design requirements
- Category V lighting designs
- Category P lighting designs
- Council owned and/or maintained lighting projects
- Under awning and temporary lighting designs.

## Submissions

All public lighting design submissions are to be sent to City Lighting via email at CS-Lighting@brisbane.qld.gov.au.

Information included in the lighting design submissions shall include:

- Development/subdivision name
- Development/subdivision address
- Development/subdivision stage
- Development approval number
- Development approval conditions package
- Certified design
- Drawing number and revision
- North point
- Scale bar
- Signed certification
- Schedules
- Identify limit of works
- Identification of illuminance design areas
- Calculations results for illuminance design areas (includes surrounds for V category roads)
- Provide luminance spacing calculations
- Show the distance between luminaires on the design drawings
- Include all required compliance information as per AS/NZS 1158
- Include all required compliance information as per AS/NZS 4282
- Include all required compliance information as per AS/NZS 3000



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- Curve Radius/Radii shown
- illuminance design files to be submitted.
- Design results showing lower wattage luminaires provide a non-compliant outcome.

## Concept designs

Where concept designs are presented to Council to show a preferred layout or non-compliances to the above requirements, it is expected that sufficient information accompanies the concept design to allow for the design to be reviewed. This would include:

- All essential details required to undertake a design to prove compliance, these are not required to be scheduled.
- Show non-compliant and alternatively compliant concept designs and reasoning behind the proposed non-standard arrangement proposed.

## Council City Plan 2014 requirements

City Plan invokes the AS/NZS 1158 series of standards and in certain scenarios amends the requirements. When AS/NZS 1158 requirements are amended, the City Plan must be followed.

### Submission quality

Council takes into consideration the quality of a submission and identifies defects and non-compliances during the assessment.

Below are examples of defects/non-compliances which may be identified in the design:

- The submission shows failure of compliance with City Plan.
- The submission shows failure of compliance with a AS/NZS 1158.
- The submission shows failure of compliance with a AS/NZS 4282.
- The submission shows failure of the compliance with AS/NZS 3000 (where applicable).
- Lighting design provides lighting outcome that is much higher than the intended lighting subcategory (over-lighting).
- Design is not energy efficient, using LEDs alone does not make a design energy efficient.
- Incorrect calculations are submitted.
- Incorrect certification details.
- Designed to the incorrect lighting subcategory.
- Luminaire mounting height can be reduced by 1.5m or more.
- Significant spacing variance between lighting poles.
- Incorrect i-tables used or luminaire i-table not compatible with nominated poles.
- Incorrect calculations provided such as incorrect parameters used.
- Schedules do not reflect the general arrangement drawing.
- Designs are to include the next existing luminaire on the road from the design area to show that the proposed lighting shows compliance at the extremities of the design area.



- Number of luminaires can be reduced without affecting compliance.
- Higher luminaire wattage is used while lower luminaire wattage can be used without affecting compliance.
- Not requesting the lighting subcategory.
- No Energex project number is shown on drawings.

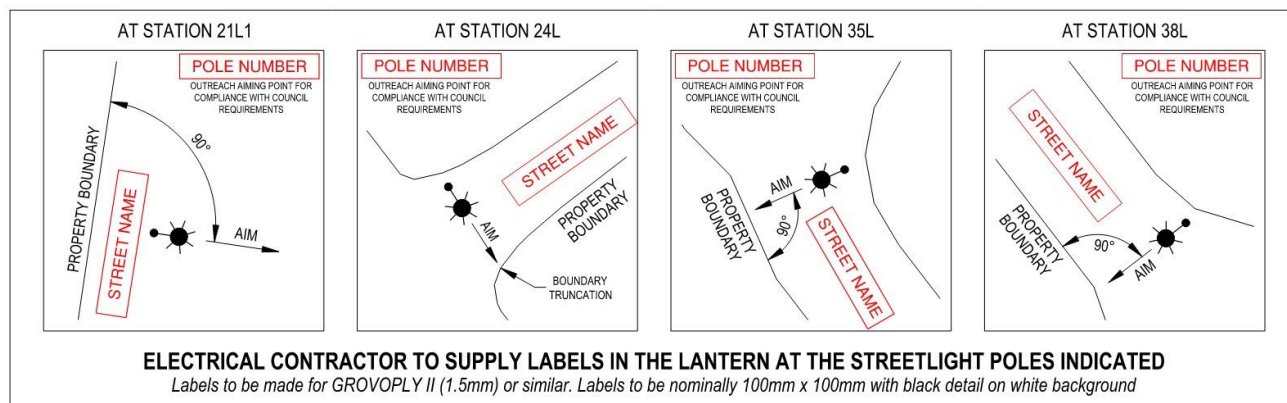
## General design requirements

The following list contains general guidance for lighting consultants on the expected information and design factors to be considered when designing Rate 2 and Rate 3 lighting.

- Where an applicable standard has been revised/updated, the revised/updated version shall apply as soon as practicable to all designs submitted to City Lighting, with a maximum grace period of 3 months before the new requirements shall be enforced.
- Request for street lighting parameters if requirements not in the DA or confirmation of street lighting parameters if requirements are included in the DA. DA conditions to be included with street lighting parameters request.
- If the lighting consultant believes the design parameters nominated do not suit the installation and/or site conditions, the consultant is requested to raise this with City Lighting.
- All new lighting and all relocated lighting is to be LED.
- It is the lighting consultant's responsibility to engage with Energex to ensure that the supply is available and accessible for public lighting.
- Non-compliances with AS/NZS 4282 to be raised and acceptance confirmed by City Lighting before submission and documented in the compliance certificate.
- No more than two poles located adjacent to the one property street frontage up to 4m past each of the property boundary locations. This should be minimised as far as practicable to limit spill light issues.
- Pole heights to be minimised and consistent.
- Consistent spacings to be used as far as practicable. Spacings should not vary by more than 20% in a continuous run of spans.
- Lighting not to be spaced less than  $S/2$  (maximum spacing divided 2), unless otherwise unavoidable. This shall be agreed with City Lighting prior to submission.
- The lighting power consumption shall be minimised.
- The number of luminaires required to provide a compliant design is to be minimised.
- In subdivisions it is expected that if a project is extending or modifying the current lighting arrangement that the dominant luminaire style in the subdivision will be used for the modifications, this may require additional columns and luminaires to be installed for compliance. Where Energex standard products are no longer available, contact City Lighting for advice on suitable poles and luminaires.
- For P and V category designs, the minimum spacing is to be used when interfacing with different arrangements, lamp types/wattages, etc.
- The use of the 10% allowance for spacing is to be confirmed with City Lighting before it is adopted in a design.
- Where Pedestrian lighting and lighting installed in the building's awning are to be integrated, both submissions are required to evaluate the interaction.
- Poles on roads without kerbs are to be located a minimum of 3m behind the lane edge line.

- Lighting shall not be removed for accessible roads or footpaths until temporary lighting, or the final design lighting has been installed to suit the installation.
- It is preferable for a street light to be installed on the approach side and close to a bus stop location.
- Pedestrian crossing lighting to use louvred LED luminaires.
- Where standard footings are not used, the proposed foundation needs to be included on the design drawings along with certification of the design.
- All lighting is to be aero screen type, unless otherwise agreed with City Lighting. Except lighting of Pathway Links, where the Pathway Visor and Louvres are to be fitted.
- Where the luminaire orientation has been rotated and no longer perpendicular to kerb, in agreement with City Lighting, a label shall be installed on the inside of the pole access hatch for this site, similar to those shown below. This requirement shall be included on the design drawings.

Example of labels for sites where the outreach is to be installed NOT perpendicular to the kerb:



## Category V lighting designs

The following guidance is provided for V category roadway lighting installations:

- For 'V5' roads the preferred mounting height is 9m.
- For 'V3' roads the preferred mounting height is 10.5m.
- Spacing calculations are to provide sufficient detail in regard to the span or spans that they are referring to such as reference to station numbers, chainages, etc.
- For 'V5' roads the maximum luminaire wattage is to be 90W LED (2021) luminaire or equivalent as LED technology advances.
- For 'V5' roads it is expected that generally the L50 LED luminaire will be sufficient.
- 0° upcast shall be used on all designs. Where it is found that a 5° upcast will reduce the number of columns and luminaires required, City Lighting is to be consulted and must agree prior to design submission.
- All values as required by the relevant part of AS/NZS 1158 series to be supplied. This includes illumination design areas for V category areas as well as the surrounding areas where applicable.



- Consistent luminaire wattage should be used for the design. It is expected that an L170 would not be placed in a run of L50 luminaires.
- The resultant design shall not achieve a lighting outcome that is higher than 1 sub-category above the required lighting sub-category for any span.
- Where minor non-compliances are found, discussion with City Lighting may allow the non-compliances in the lighting design to minimise other potential issues.
- It is expected that the design consultant will achieve luminance requirements on the through carriageways at intersections as per AS/NZS 1158.
- All illuminance design areas shall be outlined, and the illuminance levels supplied shall be in accordance with the requirements of AS/NZS 1158 series. This includes illuminance levels and uniformity for surround areas.
- If a luminaire adjacent to an intersection is amended in any way the lighting of the intersection shall be evaluated and results of the evaluation provided, including where the designer attempts to exclude the intersection for the LOR (limit of responsibility).
- AS/NZS 4282 compliance to be submitted.

## Category P lighting designs

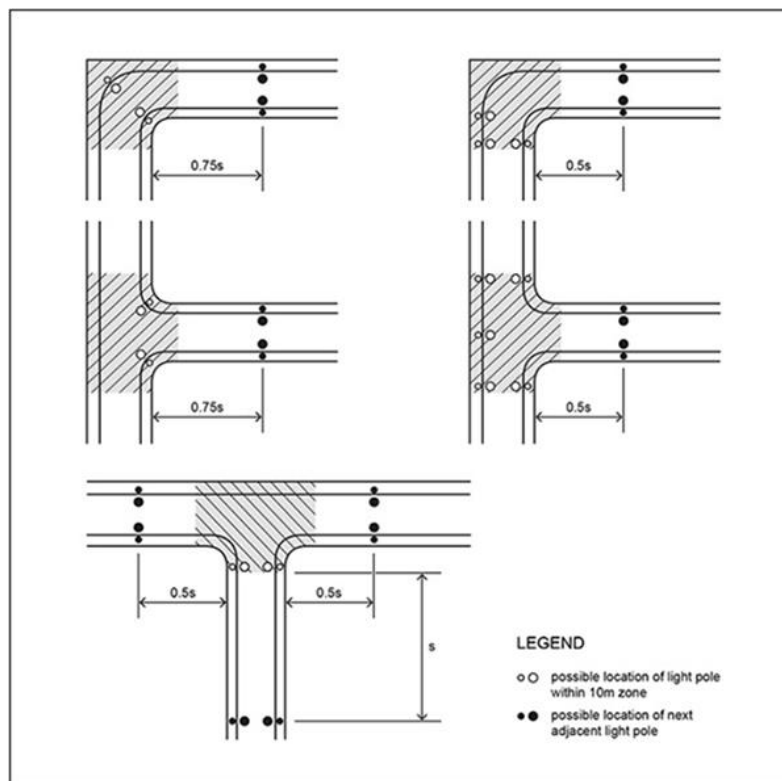
The following guidance is provided for 'P' category roadway lighting installations:

- Council City Plan amendment to AS/NZS 1158.3.1 are to be used in the design.
- For situations where lighting is required as per clause 4.3.2 (b) of AS/NZS 1158.3.1, an L50 or equivalent new LED product shall be used at a mounting height of 7.5m maximum to achieve the required light level over the nose(s) of the island. Standard 4.5m outreach or 5m special outreach. These measures are to minimise spill light to residents.
- 0° upcast shall be used on all designs. Where it is found that a 5° upcast will reduce the number of columns and luminaires required this is to be discussed and agreed with City Lighting prior to design submission.
- Preferable mounting height of 7.5m for steel poles. Preferable mounting height of 5.1m for estate poles.
- Consistent luminaire wattage should be used for the design.
- Luminaires to be spaced at no more than 65m, unless agreed with City Lighting prior to design submission.
- The resultant design shall not achieve a lighting outcome that is higher than 1 sub-category above the required lighting sub-category for any span.
- Where minor non-compliances are found, discussion with City Lighting may allow the non-compliances in the lighting design to minimise other potential issues.
- There should be no more than 2 poles located adjacent to the one property street frontage up to 4m past each of the property boundary locations
- 'V' category lighting designed for installation in 'P' category road where required at the intersections of 'V' and P category roads is to be mounted no higher than 7.5m
- Lighting not to be spaced at S/2 or less, unless otherwise unavoidable.
- AS/NZS 4282 compliance to be submitted.

## Designs with tight bends

This diagram is included to assist designers in interpreting the text in the Council City Plan 2014 for tight bends which can also be applied to intersections for 'P' category roads.

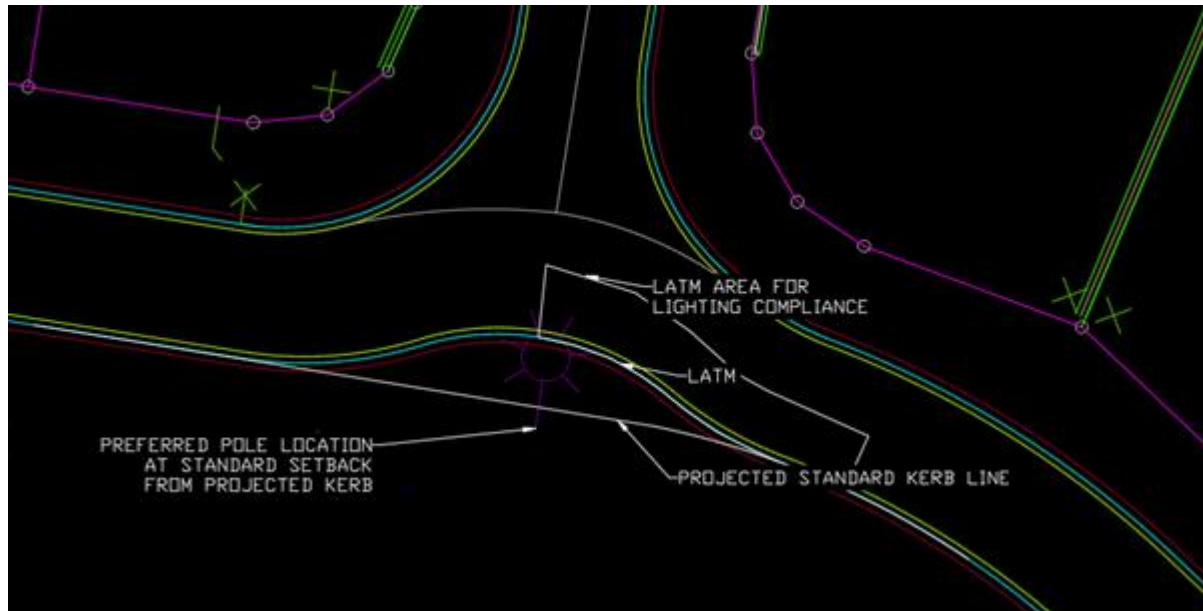
- This still requires that the spans are calculated to show that the minimum required LTPs are still met.
- The span is light to light, not just the curve itself, this is to ensure that the entire curve is compliant and that each span also remains compliant as required by AS/NZS 1158.3.1. This may require multiple calculation areas if the curve is greater than one span.



## Designs including LATM devices

This diagram shows requirements for a Local Area Traffic Management (LATM) device where the kerb itself is modified, and the preferred location of the luminaire in this instance.

- Note the pole setback from the projected kerb.
- Other factors and requirements are to be taken into account when placing the pole.



- If the area is not classified as an LATM device, it is preferred that a luminaire is installed at the location indicated and located at the standard setback from the projected kerb line.

## Council owned and/or maintained lighting projects

The following guidance is provided for Pedestrian, Parks and Metered lighting installations:

- Council standard drawings are to be complied with, except where specifically instructed.
- Council, Department of Transport and Main Roads or Energex standard equipment to be used, as applicable. Discuss with City Lighting early in the design process to minimise the possibility of redesign work.
- 0° upcast shall be used on all designs. Where it is found that a 5° upcast will reduce the number of columns and luminaires required this is to be discussed and agreed with City Lighting prior to design submission.
- All pole mounted luminaires shall be fitted with a 7 pin NEMA receptacle and 3 pin NEMA PE Cell or blanking cap as applicable to the design.
- For Council owned and/or maintained installations Earth Fault Loop requirements shall be met before the inclusion of the RCD/RCBO in the design.
- All electrical calculations are to be submitted with the design, including voltage drop and fault loop calculations. Sufficient information is to be provided to allow for the calculations to be checked. Fault Loop Impedance calculations are to include all components including the transformer and all downstream components. Calculations shall be provided for each metallic enclosure, switchboard, pole, luminaire, etc. The calculation to the last pole/luminaire on each circuit is sufficient.



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- All cabling is to be a minimum of 16mm<sup>2</sup> with reticulated earth where required unless agreed otherwise with City Lighting.
- There should be no more than 2 poles located adjacent to the one property street frontage up to 4m past each of the property boundary locations.
- Designs are to include schedules for luminaires, conduits, and cables.
- Schedules shall closely resemble those in Energy Queensland Limited (EQL) designs and be included in design documentation. These will be slightly different unless specific EQL-approved items are to be used.
- Site IDs are to be included on the design drawings. Site IDs are available from City Lighting for metered, solar, and unmetered Tariff 91 installations.
- Lighting not to be spaced at S/2 or less, unless otherwise unavoidable.
- For DA specified 'Pedestrian Lighting' the Council City Signature poles and iGuzzini V949 BCC Special 9W luminaires are to be used.
- Designs shall show that the vertical calculation points at curves or corners in a pathway continue to be provided with compliant lighting levels.
- City Lighting is to be contacted to undertake an inspection of the installation prior to the installation being given 'On Maintenance' status. City Lighting will then provide an email that the DA condition is satisfied for the 'On Maintenance' requirement. When contacting City Lighting for this requirement supply the following documentation:
  - As Built Drawings.
  - Electrical Test results for the installation. The results for EFLI shall show compliance for EFLI for the size and type of the protective device not allowing for the RCBO/RCD.
- The design shall be compliant with AS/NZS 3000.
- AS/NZS 4282 compliance to be submitted.
- Plans, scope, switchboard location, POS location, cable runs, etc are to meet the requirements of a design of sufficient detail for a TMR Rate 3 project.
- Awning lighting and Pedestrian lighting designs are to be submitted at the same if both are applicable to a development.
- Minimum size of conduit from pit to pit, and pit to POS to be 100mm.
- There is to be a pit generally within 3m of each light.
- There is to be a junction box in each pit for each light.
- There is to be a 4A fuse and fuse carrier installed in the junction box for each light.
- The cable size from the switchboard through the pits is to be a minimum of 16mm<sup>2</sup> 2C + 16mm<sup>2</sup> E.
- The cable from the pit to the pole is to be a 4mm<sup>2</sup> 2C+ 6mm<sup>2</sup> E.

## **Tree/vegetation near lighting requirements in *Brisbane City Plan 2014***

Lighting consultants must be aware of City Plan requirements regarding trees and vegetation near lights.





Refer to City Plan 2014 Schedule 6, SC6.16, Chapter 3 Clause 3.7.7.5 e. text included below.

1. Unless specified otherwise in this chapter, the design and installation of pedestrian lighting meet the following requirements:  
"...to be located below the tree canopy of existing trees or sufficiently separated from existing or proposed vegetation so the vegetation does not obstruct light reaching the area intended to be illuminated. Council's preference is to have a clear trunk of a minimum height of 3m at maturity where located within 7m of a pedestrian light."

## On and off maintenance requirements

These requirements are only applicable where Council is the owner/maintainer of the installation such as pedestrian lighting.

### On maintenance

The developer must contact Council's City Lighting team to arrange a commissioning/on maintenance date for the lighting/electrical after the defects and non-compliance issues identified in the pre-commissioning audit report have been rectified.

Prior to the pre-commissioning audit, the developer is to supply the 'As Built' drawings, electrical test certificates, installation certification, etc.

Final inspection/compliance inspection shall be carried out by an appointed Council's Electrical Compliance Officer and/or a Council Development Assessment engineer. If satisfactory, Practical Completion will be granted which will initiate the defects liability period.

### Off maintenance

The developer shall contact Council to arrange an off-maintenance inspection. Any defects identified shall be rectified at no cost to Council.

## Under awning and temporary lighting designs

### Under awning lighting designs

The following guidance is provided for under awning lighting designs:

- Lighting is to be designed in accordance with lighting technical parameters (LTP) for lighting category PA1 for footpaths.
- The lighting installed under the awning is to light the area of the footpath under the awning plus an additional 2m toward the kerb to the required lighting sub-category.
- Any remaining area from 2m out from the awning toward the kerb can be lit to the requirements of lighting category PP3.



- Under-awning lighting submissions shall clearly show the point horizontal illuminance values and vertical illuminance values for both directions on separate layouts to allow compliance to be readily assessed. LTP results are to be summarised in a table for each design area.
- Unless the awning is adjacent to another awning, the luminaires used at the ends of the awning shall be capable of providing a minimum of a 23m spacing for the footpath width for lighting subcategory PP3. (It is expected that luminaires with a wide beam optic will be installed at the ends of the awnings to achieve this outcome).
- The maximum acceptable average horizontal illuminance for an awning lighting design is 60 lux.
- Awning lighting and Pedestrian lighting designs are to be submitted at the same if both are applicable to a development, or as advised by City Lighting.
- Under-awning lighting submissions shall state on the drawings the following:
  - The lighting is to be operated from dusk to dawn.
  - Lighting is not to be operated by a time clock.
  - PE cell control only shall be used.
  - Lighting is to be owned and maintained by the building owner.
  - Lighting is to be maintained in good working order.

### **Temporary lighting designs**

If a development removes the existing public lighting, the developer must provide temporary lighting until the permanent lighting is reinstalled.

- Temporary lighting designs are to be submitted as per a standard design submission for acceptance.
- Temporary lighting must be accepted by City Lighting and installed prior to the removal of any existing lighting.
- The temporary lighting submission is to be accompanied by the proposed permanent lighting design for installation at the end of the requirement for temporary lighting.
- The proposed permanent lighting is to be installed and operational prior to the decommissioning of the temporary lighting.
- Temporary lighting is to be installed to any publicly accessible area where the existing lighting is to be removed for any period of time.

In addition, the following items could be applicable:

- If external temporary lighting is used, glare to motorists and residents must be considered.
- Flood lights are not acceptable for road lighting.
- Noise produced by any generators used must be considered.
- Temporary solar lighting must have a 5 day autonomy (days without generation).
- Existing public lighting cannot be energised by the development site's power.
- Confirm the timing/dates of Energex/accredited contractor will be carrying out the works.