Public lighting designs – information guide

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Public lighting in Brisbane is the responsibility of Council. Public lighting includes street lighting, pedestrian lighting, under-awning lighting and metered lighting. Council requires public lighting designs to be reviewed and accepted to ensure designs comply with Council requirements.

Find information about how to submit your lighting designs at brisbane.qld.gov.au and search for “public lighting designs”.

This guide provides information about the following:

- Overview of acceptance process
- Design submission documentation
- Design standards and specifications
- Required qualifications for public lighting designers
- Submission checklist for lighting consultants
- Design resubmissions.

Overview of acceptance process

As part of their Development Approval (DA) conditions, developers may be required to submit designs for public lighting and electrical reticulation to Council for acceptance. Developers must engage lighting consultancy firms to produce these designs, submit them to Council (City Lighting) for assessment, and make corrections required for acceptance.

When a design has been accepted, a letter of acceptance is issued via email. This letter is to be submitted by the consultant to Energex for their acceptance process if required.

City Lighting design assessment is not to be used as a tool to ensure the quality of the lighting design submission.

It is expected that the lighting designs have been through the consultant’s internal quality control processes before being issued to Council. It is expected that lighting consultants have comprehensive knowledge of the applicable standards and requirements of public lighting design in the Brisbane City Council area.

This process includes but is not limited to the following:

- Liaison and technical design review on electrical reticulation and public lighting drawings to ensure design compliance with AS/NZS 1158 (P and V category), AS/NZS 4282, AS/NZS 3000, Brisbane City Council Infrastructure Design Planning Scheme Policy (IDPSP), Brisbane Standard drawings (BSD), Energex technical documents and in accordance with the Professional Engineers Act.
- Consultant design inquiries regarding public lighting and electrical reticulation.
- Design is assessed as:
    - Fit for purpose.
    - Easy to maintain.

  - Energy efficient.
  - Compliant.
  - Minimised spill light impact on residents.
  - Minimising over lighting.
  - Considering future planning.
  - Increasing public safety and minimising environmental impact.
  - Constructible.
  - Sustainable.
- Work with consultants for alternative solutions to achieve the above or when technical or non-compliance issues arise.

Development conditions scope

A street lighting condition refers specifically to the lighting of the carriageway and surrounds for ‘V’ category lighting or to the road reserve for ‘P’ category lighting.

A pedestrian lighting condition refers specifically to the lighting of the footpath area around or adjacent to the development. If the condition states that the installation is to comply with UMS drawings, then any reference to UMS drawings requires the relevant BSD drawing to be used.

The pedestrian lighting condition requires a separate installation to the street lighting condition. Street lighting contribution must not be used to show compliance with the pedestrian lighting condition and vice versa. Generally, the Council approved luminaire and pole will be used under rate 3 conditions for the pedestrian lighting.

An under awning lighting condition is for lighting installed in the building’s awning to light the whole width of the footpath, not just the area under the awning. Note that the area is a footpath (not a public activity area) and as such the calculation points include both vertical and horizontal calculation points along the footpath.

Lighting installed under the awning is to fully meet the lighting technical parameters (LTP) requirements as specified in the condition without the contribution of any other lighting in the vicinity e.g. street lighting, pedestrian lighting, etc.

Awning lighting and pedestrian lighting designs are to be submitted at the same time if both are applicable to a development, or as advised by City Lighting.

For public lighting reflected light is not to be used in the calculation of the lighting values for compliance with the applicable LTPs.

Further information on categories can be found in the other sections of this page.

Design submission documentation

For design submissions presented to Council, all documentation required by AS/NZS 1158 shall accompany the design to allow for the design to be reviewed, as well as any other documentation requested by Council. This includes, but is not limited to:

- Information must be legible and must show calculations in full.
- Spacing calculations.
- Identification of illuminance design areas.
- Show LORs on the drawing.
- Show the spacing of luminaires on the design drawings.
- Include all required compliance information as per AS/NZS 1158 and AS/NZS 4282.
- Submit non-compliant and alternatively compliant concept designs:
    - Proposed luminaire's wattage is higher than expected.
    - Show the difference between 0° tilt to a 5° tilt if this minimises the number of luminaires, the wattage of luminaires, or the mounting height.
- Schedules as set out by Energex. For any Council owned and maintained lighting similar schedules are to be submitted.
- Luminaire reference or station number to enable review.
- Curve radius/radii shown, adjustment spacing calculations provided.
- Submissions to include the PDFs and illuminance design files to be submitted.
- Single line diagrams.
- Switchboard details.
- Show Energex points of supply.
- Show location of main switchboard.
- Ensure any reference to lighting installed under another Energex project, whether direct by Energex or another developer, includes a reference to the Energex project number.

Any non-compliance or defect not already agreed with City Lighting in the design will result in the design being returned to the consultant for rectification and a re-assessment fee will be applied. These issues include but are not limited to:

- Calculations showing incorrect design or incorrect design files used or luminaire design files not compatible with nominated poles.
- Incorrect calculations provided - wrong i-table, incorrect parameters used.
- Not including obtrusive lighting results.
- Over-lighting, where smaller luminaires and or less luminaires are able to achieve the required outcome.
- Excessive amounts of spill light, non-compliant with AS/NZS 4282.
- Electrical design non-compliant with AS/NZS 3000.

Where the above are not achievable the design consultant shall discuss the issues with City Lighting and agreement reached on the preferred solution.

The revision submitted to Council for acceptance, shall be the same version submitted to Energex, and the same version that is constructed.

Any changes or amendments to the design after acceptance shall be resubmitted to City Lighting to allow for the changes to be reviewed and commented on if required, prior to construction.

Design standards and specifications

The following list includes the relevant documents related to lighting and electrical design.

Standard	Description
BCC City Plan	Brisbane City Council, Brisbane City Plan 2014 (City Plan)
AS/NZS 1158.0	Lighting for roads and public spaces Part 0
AS/NZS 1158.1.1	Lighting for roads and public spaces Part 1.1- Vehicular traffic (Category V) lighting - Performance and design requirements
AS/NZS 1158.1.2	Lighting for roads and public spaces Part 1.2: Vehicular traffic (Category V) lighting– Guide to design, installation, operation and maintenance
AS/NZS 1158.3.1	Lighting for roads and public spaces Part 3.1: Pedestrian area (Category P) lighting – Performance and design requirements
AS/NZS 1158.4	Lighting for roads and public spaces Part 4: Lighting for roads and public spaces - Lighting of pedestrian crossings
AS/NZS 1158.5	Lighting for roads and public spaces Part 5: Lighting for roads and public spaces – Tunnels and underpasses
SA/SNZ TS 1158.6	Lighting for roads and public spaces - Luminaires – Performance
AS/NZS 4282	Control of the obtrusive effects of outdoor lighting
IES TM-21-11	Projecting Long Term Lumen Maintenance of LED Light Sources
IES LM-79-08	IESNA Approved Method for the Electrical and Photometric Measurements of Solid- State Lighting Products
IES LM-80-15	IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources
IES LM-84-14	Measuring luminous flux and colour maintenance of LED lamps, lighting engines and luminaires
IES TM-28-14	Projecting Long-Term luminous flux Maintenance of LED lamps and luminaires
IEC 61347-2-13	Particular requirements for D.C. or A.C. supplied electronic control gear for LED modules
IEC 61547	Equipment for general lighting purposes - EMC immunity requirements

IEC 62386	Digital Addressable Lighting Interface (DALI) standard
AS/NZS 60598.1	Luminaires - General requirements and tests
AS/NZS 60598.2.3	Luminaire Particular Requirements – Luminaires for road and street lighting
AS CISPR 15	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

IEC 61643-11	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
ANSI C136.2	American National Standard for Roadway and Area Lighting Equipment – Dielectric Withstand and Electrical Transient Immunity Requirements
ANSI C136.41	Dimming Receptacles
RoHS 2 (2011/65/EU)	Restriction of the use of certain hazardous substances
AS/NZS 3000	Wiring Rules
AS/NZS 3008.1.1	Electrical installations – selection of Cables for alternating voltages up to and including 0.6/1kV – Typical Australian installation conditions.
AS/NZS 3017	Electrical installations – Verification guidelines
AS/NZS 3100	Approval and test specification - General requirements for electrical equipment
AS/NZS 61439 series	Low-voltage switchgear and controlgear assemblies
QECM	Queensland Electricity Connection Manual
QEMM	Queensland Electricity Metering Manual
Energex Standards	All relevant Energex Standards and Standard Equipment

Required qualifications for public lighting designers

The type of design determines the qualifications required for lighting designers, listed below.

Energy Queensland/Energex street lighting Rate 2 requirements:

- Registered Professional Engineer Queensland (RPEQ) – Electrical (with demonstrated experience in preparing road lighting design) AND
- Working for an Energex accredited consultancy firm

Pedestrian Rate 3, metered or under-awning lighting requirements:

- Registered Professional Engineer Queensland (RPEQ) – Electrical (with demonstrated experience in preparing lighting and electrical designs) OR
- A member of the Illuminating Engineering Society of Australia and New Zealand with minimum grade of “Member”.
- Electrical components/reticulation for any lighting design requirements must be certified by a Registered Professional Engineer Queensland (RPEQ) – Electrical.

Submission checklist for lighting consultants

To assist lighting consultants with their designs for submission to Council, the below checklist is provided:

- Street-lighting design parameters requested from Council’s City Lighting.
- Site visit undertaken.
- Development name.
- Development stage.
- Street names.
- Suburb.
- Development approval conditions.
- Design drawings.
- Roads, pathways, parks, development boundary, etc. clearly indicated.
- Development application number on drawings.
- Locality plan.
- For the first stage of a multi-stage development, an overall concept plan showing the stages and the extent of the road network is provided. As the development progresses and if changes are made to the overall layout, then an amended copy should be subsequently submitted to Council.
- Show electricity poles/conduits/cables/pillars/transformers etc. (existing or proposed) as required by Energex.
- Show streetlights (existing or proposed) using Energex standard symbols.
- Complete standard street light schedule, including suburb name in location field.
- Show all kerb and channels, roundabouts, traffic islands, median strips, local area traffic management devices, etc. to be constructed as part of the development, internal or external.
- Where Council is the asset owner electrical calculations are to be provided in full with the results.

- Complete compliance documentation as required by the relevant part of AS/NZS 1158, including calculations, and computer model simulation results of lighting levels for all designs. Including the following:
    - Spacing calculations (cat V and cat P roads)
    - 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
    - Curve Radius/Radii shown, adjustment spacing calculations provided
    - Illuminance design files to be submitted.
    - Design results showing lower wattage luminaires provide a non-compliant outcome.
    - Contours showing average, minimum, etc lighting contours as applicable. Additional contours may be included.
    - Submit with the application complete compliance documentation as required by the relevant part of AS/NZS 4282, including calculations, and computer model simulation results of lighting levels.
    - Include information showing that lower wattage luminaries provided non-compliant outcomes.

Design resubmissions

Any non-compliance or defects not already agreed with Council will result in the design being returned to the consultant for rectification. These issues include:

- the design does not meet the requirements of City Plan
- calculations showing incorrect design or incorrect design files used or luminaire i-table not compatible with nominated poles
- incorrect calculations provided - wrong i-table, incorrect parameters used
- not including obtrusive lighting results
- over-lighting, where smaller and or less luminaires are able to achieve the required outcome.
- excessive amounts of spill light, non-compliant with AS/NZS 4282
- electrical design non-compliant with AS/NZS 3000, where applicable.

Where the above are not achievable the design consultant shall engage with Council to reach agreement on the preferred solution.

It is expected that if the design consultant finds themselves having issues with the existing luminaires adjoining a particular development, the design consultant shall consult with Council to provide a way forward.