

Multi Storey Car Park at The Children's Hospital at Westmead SSDA No. SSD-10434896

External Lighting Strategy

Electrical Services

Prepared for: Health Infrastructure C/ PwC

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Revision

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Design with **community** in mind



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1. Introduction

Stantec has been engaged by Health Infrastructure NSW to prepare an external lighting strategy report for the proposed Children's Hospital at Westmead (CHW) Redevelopment located on Redbank Rd, Westmead NSW 2145.

1.1 Proposed Development

The proposed development under this SSDA is a Multi Storey Car Park (MSCP) accommodating both staff and visitor car parking to be located on Labyrinth Way, on the site of The Lodge.

The scope of proposed works includes:

- Demolition of The Lodge
- Construction of a new MSCP to a maximum height of RL 42.10, approximately 8 car parking storeys, which is equivalent to the height of 5 storeys of the hospital.
 - Facilitating up to around 992 car parking spaces for staff and visitors
 - Vehicular access from Labyrinth Way and / or Redbank Road
 - A split-level approach to the MSCP to respond to the natural ground level
- Ancillary retail facilities
- Road works:
 - Realignment of Redbank Road with vehicular access connection to MSCP
- Tree removal
- Associated landscape works

The MSCP is being designed to be constructed in a single stage yet car parking will be staged operationally to come on-line with parking demand across the Precinct:

- The first stage of car parking operation would provide replacement car parking for the demolished P17 car park. There would be no net increase of parking on site under this stage.
- The second stage of car parking operation to serve the growth in hospital activity associated with the future PSB (subject to a separate SSDA) would only come on-line operationally with the PSB SSDA consent becoming operational, specifically at occupation. This would provide growth of around 280 additional spaces in line with hospital activity projections until 2031.

1.2 SEARs Requirements

This report addresses the requirements outlined in the Planning Secretary's Environmental Assessments Requirements (SEARs), issued 20 November 2020 for application SSD-10434896 Multi Storey Car Park at The Children's Hospital at Westmead.

This report addresses SEARs Item 5:

- **5. Environmental Amenity**

Provide an analysis of proposed lighting that identifies measures to reduce spill into the surrounding sensitive receivers (refer to Section 3)



2. External Lighting Strategy

2.1 General

LED light fittings will be provided to external areas associate with the new Multi Storey Car Park (MSCP) including external building surrounds, access roads and pedestrian pathways.

External light fittings will be controlled via photoelectric cells (PE cells) to automatically switch on and off at pre-determined lighting levels.

External lighting will be designed to comply with the following standards:

- AS/NZS 3000 – Electrical installations “Wiring Rules”
- AS/NZS 4282 – Control of the obtrusive effects of outdoor lighting
- AS/NZS 1158.3.1 – Pedestrian area (Category P) lighting – Performance and design requirements

Note: The final lighting design & modelling is subject to the detailed design process.

In order to address SEARs Item 5, outlined in Section 1.1 of this report, the external lighting design will give due consideration to the following:

- Lighting based on Crime Prevention Through Environmental Design (CPTED) principles
- Minimisation of external lighting spillage to adjacent sensitive receivers (Refer to Section 3)
- Energy efficient lighting
- Aesthetically suitable lighting arrangement
- Lighting control systems
- Maintenance and ongoing running costs

2.2 External Building Surrounds

Lighting to external building surrounds will be provided to integrate with the architectural design and the overall aesthetics of the building. Vandal and weather resistant LED light fittings will be provided in external areas as appropriate.

Lighting to external building surrounds will be provided to achieve lighting subcategories:

- PR2 for access roads (refer to Section 2.3); and
- PP2 for pedestrian pathways (refer to Section 2.4).

Lighting to external building surrounds will also be provided for security purposes. Lighting levels associated with lighting category PP2 will be enough to enable operation of surveillance cameras (typically 0.3 - 0.6 lux).

Lighting category PP2 is determined based on the following selection criteria:

- Pedestrian/cycle activity – High
- Fear of crime – Medium

The light technical parameters associated with Category PP2 lighting are as follows:

- Average horizontal Illuminance – 7 lux
- Point horizontal illuminance – 1 lux



- Illuminance (horizontal) uniformity – 5
- Point vertical Illuminance – 0.3 lux

2.3 Access Roads

Access road lighting will be designed to comply with both AS/NZS 1158.3.1 – Pedestrian area lighting (category P), and AS/NZ 4282 – Control of the obtrusive effects of outdoor lighting.

Lighting to access roads will be designed to lighting subcategory PP2.

Lighting category PR2 is determined based on the following selection criteria:

- Pedestrian/cycle activity – High
- Fear of crime – Medium
- Need to enhance amenity - High

The light technical parameters associated with Category PR2 lighting are as follows:

- Average horizontal Illuminance – 3.5 lux
- Point horizontal illuminance – 0.7 lux
- Illuminance (horizontal) uniformity – 8

Where required, it is proposed to utilise pole mounted LED light fittings with Type 2M/3M optics.

Light fittings will have zero-degree horizontal cut off to minimise any upward light spill.

Where necessary, light fittings will be provided with shields to prevent light spill into adjoining properties and sensitive receivers as identified in Section 3.

Surface-mounted LED light fittings will be fixed to the building where appropriate to the architectural intent.

2.4 Pedestrian Pathways

Pedestrian pathway lighting will be designed to comply with both AS/NZS 1158.3.1 – Pedestrian area lighting (category P), and AS/NZ 4282 – Control of the obtrusive effects of outdoor lighting.

Lighting to new pedestrian pathways will be designed to lighting subcategory PP2.

Lighting category PP2 is determined based on the following selection criteria:

- Pedestrian/cycle activity – High
- Fear of crime – Medium

The light technical parameters associated with Category PP2 lighting are as follows:

- Average horizontal Illuminance – 7 lux
- Point horizontal illuminance – 1 lux
- Illuminance (horizontal) uniformity – 5
- Point vertical Illuminance – 0.3 lux

It is proposed to utilise pole mounted LED light fittings with Type 2M/3M/Type 4M/Type 5M (Symmetrical) optics.

Light fittings will have zero-degree horizontal cut off to minimise any upward light spill.



Where necessary, light fittings will be provided with shields to prevent light spill into adjoining properties and sensitive receivers as identified in Section 3.

Surface-mounted LED light fittings will be fixed to the building where appropriate to the architectural intent.

2.5 External Car Parks

External car park lighting will be designed to comply with both AS/NZS 1158.3.1 – Pedestrian area lighting (category P), and AS/NZ 4282 – Control of the obtrusive effects of outdoor lighting.

Lighting to new external car park areas will be designed to lighting subcategory PC1.

Lighting to designated parking spaces specifically intended for people with disabilities will be designed to lighting subcategory PCD.

Lighting to any designated areas for pedestrians to cross will be designed to lighting subcategory PCX.

Lighting subcategory PC1 is determined based on the following selection criteria:

- Night time vehicle and/or pedestrian movements – High
- Fear of crime – High

The light technical parameters associated with Category PC1 lighting are as follows:

- Average horizontal Illuminance – 14 lux
- Point horizontal illuminance – 3 lux
- Illuminance (horizontal) uniformity – 8
- Point vertical Illuminance – 3 lux

The light technical parameters associated with Category PCD lighting are as follows:

- Point horizontal illuminance – greater than 14 lux and greater than the average for the overall car park

The light technical parameters associated with Category PCX lighting are as follows:

- Average horizontal Illuminance – 21 lux
- Point horizontal illuminance – 5 lux
- Illuminance (horizontal) uniformity – 8

It is proposed to utilise pole mounted LED light fittings with Type 3M/Type 4M/Type 5M (Symmetrical) optics.

Light fittings will have zero-degree horizontal cut off to minimise any upward light spill.

Where necessary, light fittings will be provided with shields to prevent light spill into adjoining properties and sensitive receivers as identified in Section 3.



3. Light Spill Minimisation

All new external lighting will comply with AS 4282 – Control of the obtrusive effects of outdoor lighting.

External lighting will be designed with due consideration of lighting spillage to adjacent properties and sensitive receivers.

Locations sensitive to light spill have been identified as follows:

- Ronald McDonald House Westmead, 1 Labyrinth Way, Westmead NSW 2145
- Existing Children's Hospital at Westmead building including, but not limited to, the following wards/departments
 - Hall Ward – Acute psychiatric (Level 1)
 - Diabetes Day Care Centre (Level 1)
 - Wade Ward Adolescent (Level 1)
 - Hunter Baillie Ward Toddlers (Level 1)
 - Turner Ward Care By Parent (Level 2)
 - Medical Day Stay (Level 2)
 - Read Ward – Sleep Unit (Level 2)
 - Butterfly Wing – Renal Treatment Centre (Level 2)
 - Camperdown Ward Care – Oncology (Level 2)
 - Clancy Ward – General Medical (Level 3)
 - Edgar Stephen Ward – General Surgical & Cardiac (Level 3)
 - Commercial Travellers Ward – Neuroscience (Level 3)
- Paringa Unit, Cumberland Hospital, 1-7 Hainsworth St, Westmead NSW 2145

Note: The nearest sensitive receiver is the existing Children's Hospital at Westmead building, which is at least 26 metres away. All other potential sensitive receivers listed above are located further away.

The following approaches will be incorporated into the external lighting design to minimise obtrusive lighting:

- Luminaire mounting heights selected to minimise spillage and cater for better lighting control
- Where possible, light fittings adequately setback from the property boundary to reduce light spill
- Light fittings with narrow beam or sharp cut of angles
- Light fittings with low vertical aiming angles
- Where necessary, light fittings will be provided with shields to prevent light spill



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