

When I'm working on a problem,
I never think about beauty. I think
only how to solve the problem. But
when I have finished, if the solution
is not beautiful, I know it is wrong.
Richard Buckminster Fuller

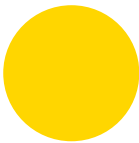
Mechanical Engineering
Lighting Design
Sustainable Design
Electrical Engineering

Copenhagen
London
Sydney
Hong Kong
New York

Level 8, 9 Castlereagh Street
Sydney, NSW, 2000, Australia
ABN 50 001 189 037
t : +61 / 02 9967 2200
e : info@steensenvarming.com

LIGHTING DESIGN

STEENSEN VARMING



Consultant Advice Note

Sydney April 9th, 2019
Project No. 187153

Ben Jones
Associate

ben.jones@steensenvarming.com
+61 / 02 9967 2200

Project Name:	Santa Sophia Catholic College	Document No	CAN E06
Project No:	187153	Revision	02
Checked:	BAJ		
Subject	Response to SEARS - External Lighting Strategy & Light Spill		

1.1 Overview

This report has been prepared by Steensen Varming on behalf of the Catholic Education Diocese of Parramatta c/TSA Management Pty Ltd (the Applicant). It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD 18_9772) for the new Santa Sophia Catholic College on the corner of Fontana Drive and the future road 'B', between Red Gables Road and Fontana Drive, in Box Hill North (the site).

The new school will cater for approximately 1,920 primary and secondary school students, inclusive of a 60 student Catholic Early Learning Centre. The school will have 130 full-time equivalent staff.
The proposal seeks consent for approximately 15,000sqm of floor space across a part five and part six storey building. The building will present as three main hubs connected by terraced courtyards and garden spaces.

The school will include:

- Catholic Early learning centre for 60 students;
- General Learning Spaces for years Kindergarten to 12;
- Community Hub – knowledge centre and cafe;
- Creative Hub – art and applied science;
- Performance Hub – multipurpose hall and music, dance and drama spaces;
- Professional Hub – administrative space;
- Research Hub – science and fitness;
- Associated site landscaping and open space including a fence and sporting facilities;
- Bus drop off from Fontana Drive;
- Pick-up and drop-off zone from future road 'B';
- Pedestrian access points from Red Gables Road north, Fontana Drive and future road 'B';
- Staff parking for 110 vehicles provided off site in an adjacent location;
- Short term parking for pick up and drop off for Catholic Early Learning Centre from Red Gables Road; and
- Digital and non-digital signage to the school.

The purpose of this CAN is to provide a response to the External Lighting Strategy along with measures to reduce spill lighting to the surrounds to support the architectural design.

1.2 External Lighting Strategy

Lighting aims to support the user journey at night time, facilitating wayfinding and orientation to direct people through the campus and assisting in the creation of a safe environment during and after school hours.

The lighting strategy shall consider use of light and other aspects rather than solely light levels on the walking surface. By good design, that embraces light and shade and subtle contrasts, while accentuating hard and soft landscape and the architectural materiality it is more likely to achieve a safe design solution than the mere distribution of light across the ground.

The lighting design aims to respond to the following objectives:

- Create a welcoming atmosphere and ambience in harmony with the urban and landscape design and the surrounding community
- Support the identity of the school and reflect it's guiding principles –
 - Intentionally Catholic
 - Safe and healthy environments
 - Learning Drives Design
 - Sustainability
 - Inclusive
- Be flexible to meet the changing requirements throughout the evening to provide a barrier free but secure campus
- Integrate seamlessly into signage to facilitate wayfinding and orientation to direct people through and around the campus supporting clear and intuitive movement
- Preserve and protect the night-time environment by minimizing upward waste light contributing to sky glow
- Support the transition from exterior to interior spaces across the site
- Be sustainable and energy efficient by appropriate equipment selection, incorporating intelligent lighting control and limiting extended periods of operation outside of campus hours

Consideration will be given to:

- Lighting of key urban features, facades and main entrances to create focal points and a night time hierarchy
- Lighting vertical surfaces where appropriate to increase perception of brightness, where it does not conflict with the requirements of AS4282
- Control of obtrusive effects of outdoor lighting.
- Visual depth surrounding key pathways to support walkability and pedestrian comfort
- Layered lighting approach to create variety of outdoor space within the builtform and to enhance the connections across site and it's surrounds
- Appropriate scale for the users of the external spaces

- Daytime visual impact of luminaires and equipment. Any visible infrastructure should be considered in relation to the urban design, integrated seamlessly into the architectural fabric and landscape elements and should not create visual clutter
- Careful selection and placement of lighting equipment to not cause discomfort or glare or intrude on important vistas.
- Shielding and concealing luminaires wherever possible

The lighting design will be developed in alignment with the key landscape and master planning principles site wide and be integrated into architectural and landscape element where possible.

Some of the key aspects of the site to be developed with architectural and landscape vision will include the following –

- Entry and drop off areas including kiss and drop along Road B, CELC drop off, bus drop off along Fontana Drive and eastern edge of the precinct along Plaza entry
- Precinct wide outdoor lighting integrated into architecture or landscape elements to provide a safe and flexible environment
- Enhancement of the key building facades to accentuate main entries into the campus and facilitate views from a distant
- External lighting language for the site to be coordinated with the development of the masterplan and surrounding roads, pathways and landscapes to ensure a cohesive solution

To reduce energy consumption and create the appropriate night-time environment, the use of a lighting control system is recommended with a time-switch and daylight interface. After curfew hours and outside of normal operation hours, when less people are using the space, light intensity may be reduced, and some lighting elements turned off.

The lighting should be of a high quality, considering light colour, rendering and distribution, to maximise the impact of the area's night-time appearance to pedestrians, residents, tourists and passers-by. It is recommended that external lighting is warm white 3000K with RA90 to support pedestrian activity, atmosphere and visual quality of the space.

1.3 Measures to reduce spill light

Key considerations in reduction of spill light –

- The site location – considered to be located in a semi – urban to urban environment with proximity to residential, retail complexes as well as water feature in the distance
- Hours of operation of the site and its neighbouring surrounds -
 - Types of surrounding properties such as residential or commercial as there are different considerations for timing and controls outside of the hours of operation.
 - Recommendation would be to have a site-wide time settings appropriate to ensure all thresholds of the site are turned off at the

- same time or possible potential to dim the lights at 8pm and turning of most lighting off latest by 11pm.
- o The dimming settings across the site and along various entries could be set to different levels depending on their proximity to retail or residential areas

The following are proposed to reduce spill light on sensitive use areas:

- Selection of luminaires with appropriate distribution for the task
- Where lighting horizontal surfaces, luminaires to have minimal upwards light ratio
- Minimisation of luminance/ glowing surfaces and direct visibility of light sources (no omni-directional luminaires)
- Shield and conceal light sources and equipment where possible
- Use of optical control accessories such as louvres and shields where appropriate
- Use of lighting control to dim/ control lighting as appropriate and required
- Consideration of sight lines and different viewing angles in design to minimise glare.