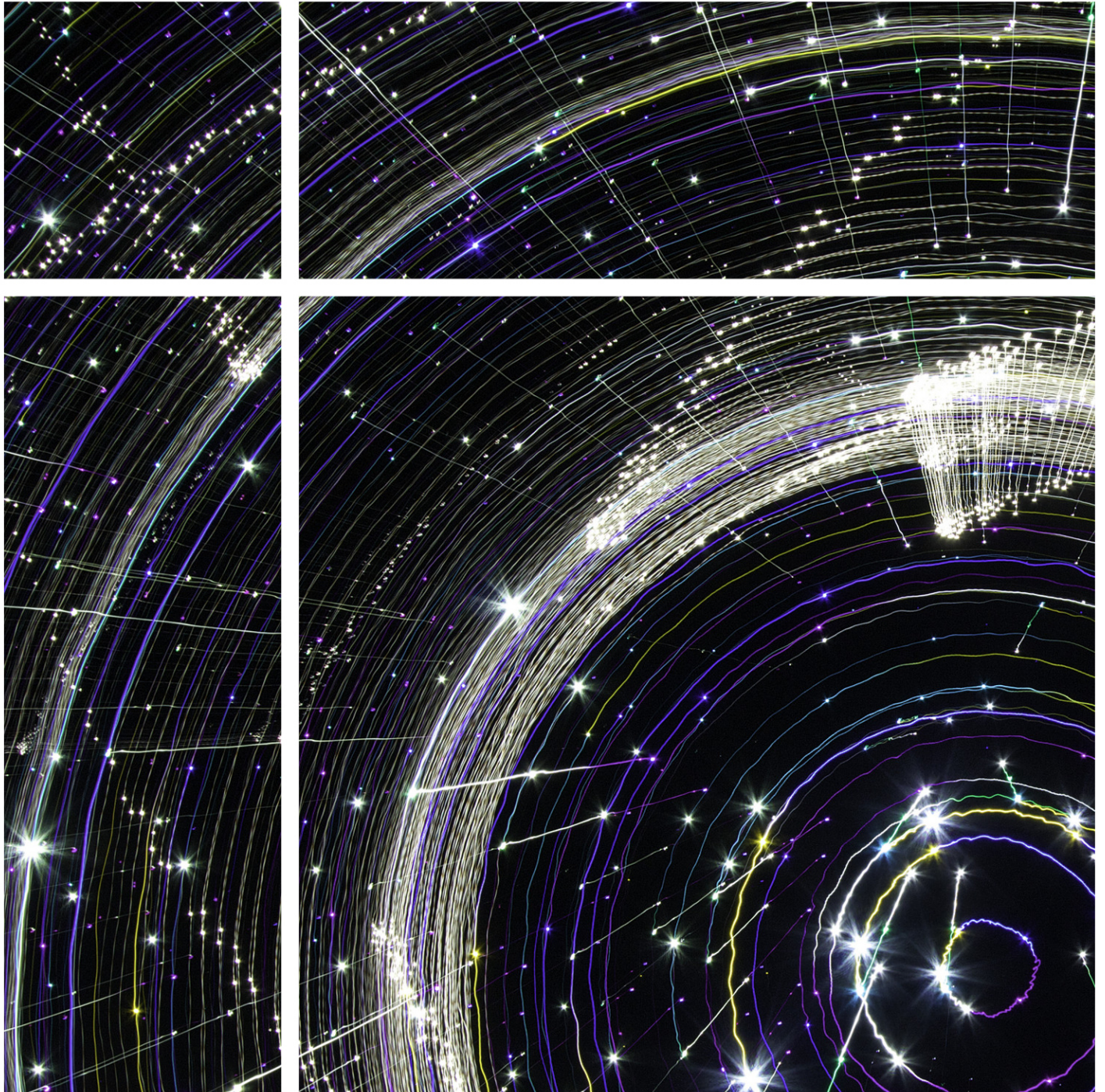


Preliminary Report

External Lighting Design & Light Spill Mitigation Strategy

CROWN SYDNEY HOTEL RESORT

Crown Sydney Property Pty. Ltd



CONFIDENTIAL

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NDYLIGHT
L I G H T I N G D E S I G N

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1 INTRODUCTION

NDYLIGHT (Norman Disney and Young) confirm that we have been engaged by Crown Sydney Pty. Ltd to carry out a strategic lighting report that outlines and addresses lighting aspects of the project including light spill analysis.

NDYLIGHT have been involved in a number of other project reports and analysis on the Barangaroo South site. We are familiar with and aware of the requirements of management, minimising unwanted stray light and mitigating adverse lighting effects to neighbouring properties, which include the Sydney Observatory.

With respect to the requirement to produce a lighting and light spill report for the Crown Sydney Hotel Resort, as a detailed lighting design is yet to be prepared an accurate assessment of the lighting design performance is difficult to provide at this time.

However it is possible at this early stage to write a lighting strategy report that sets out how the future completed design will incorporate good design principles, practices, standards and philosophies in order to prepare and produce a final lighting outcome that recognises and responds to the site's surrounding context. To this effect where required the design will be sympathetic to the requirements of minimising adverse lighting impacts to the neighbouring properties.

1.1 NDYLIGHT Experience and Qualifications

NDYLIGHT are an internationally recognised, independent, professional and qualified lighting design studio specialising in lighting and its effect on the built environment.

1.1.1 Design Lead

The project will be led and directed by Ron Green NDYLIGHT, Director in Charge. Ron's qualifications and accreditations include;

- Masters in Design Science (Building Services)
- Diploma Illumination Design (Sydney University)
- Member Illuminating Engineering Society (MIES)

1.1.2 Experience and Awards

NDYLIGHT has vast experience in lighting design on local and international projects of similar nature and with similar expectations to that of Barangaroo South. These include;

- **The Rocks Precinct (Sydney) Lighting Plan Masterplan**

The masterplan prepared by NDYLIGHT outlined the lighting principles and performance requirements for the Rocks Precinct. One of the policy's key driver's was to reduce light pollution in the city and the Rocks areas so as to minimise the effect on the Sydney Observatory. The key areas of consideration included:

- Heritage and unique qualities of The Rocks Precinct
- Australian standard compliance
- Luminary criteria and maintenance
- Urban design issues
- The environment.
- Impacts to surrounding environments

- **Canada Water Precinct Development- London**

This project involved the complete redevelopment and masterplan of a large site of approximately 35 acres. It included the construction of a new public squares and library; public areas around the waterfront; major works to water planting; large residential developments; retail; commercial and leisure buildings.

NDYLIGHT was appointed to develop a lighting strategy and design the lighting of the public square and external building facades including the library. The work included creation of unique public spaces and feature lighting of the water and waterfront areas.

- **No.1 Martin Place – Sydney**

This project involved the restoration of the historically significant GPO building and construction of two new towers, which were built on sites to the south of the pre-existing building and connected via a large glazed roof atrium.

Focus was placed on the lighting of the exterior, which provided a subtle night-time presence for the heritage building. This helps to reinforce its significance.

This project was recognised with an award from the Illuminating Society of Australia and New Zealand.

1.1.2.1 Awards

Australia

- Airport Drive Lighting Upgrade, Sydney - IES Award of Commendation 2010
- IBM Cumberland Forest, Town Centre - IES Award of Commendation 2010
- The Argyle Stores, Cleland Bond and North Wing - IES Award of Commendation 2007
- The Rocks Laneways and Stairs Nurses Walk - IES Award of Commendation 2007
- Intercontinental Hotel, Sydney - IES Award of Commendation 2004
- Llanekelly Place, Kings Cross - IES Nomination 2004
- Sydney Superdome – ACEA Award for Excellence 2001
- Sydney Superdome – IES Award of Commendation 2001
- Sydney Aquatic Centre – Engineering Excellence Award - Institute of Engineers 1996
- Governor Macquarie Tower Sydney – IES Certificate of Commendation 1996

International

- Buckley Building, London, UK - RICS Best Commercial Building 2013
- The Yellow Building, Monsoon HQ, London, UK – Highly Commended, Lighting Design Awards 2009
- Trianon Palace Hotel & Spa, Versailles, France - Best Interior Design, European Hotel Design Awards 2008
- Burlington Danes Imaging Centre, Imperial College, London, UK – Light & Architecture Design Award, A|L 2007

1.2 Purpose of this Report

This report is prepared to outline principles and strategies for the external lighting to Crown Sydney Hotel Resort to enable a logical progression from the lighting concept through the design development to the final installation. This report will be updated during the detailing of lighting concepts and lighting design development. Likewise once the lighting design for the complex has been completed a full lighting and light spill report shall be prepared and submitted in accordance with the below lighting principles and strategies. Should this assessment of the lighting strategy identify potential impacts on the surrounding area, including the Sydney Observatory, measures will be implemented or changes made to the lighting design to mitigate these impacts.

1.3 Lighting Principles and Strategies

The lighting principles outlined within this report are further expanded in the document and are intended to assess the effect of lighting solutions on the surrounding environment of the project.

In NDY Lights experience good external lighting practice includes, but is not limited to the following;

- Minimisation of the escape of waste light into the night sky and unnecessary energy consumption
- Promotion of a glare free environment for traffic and pedestrians,
- Utilisation of the latest technology for effective conversion of light into illumination
- The creation of an aesthetic appearance for night-time illumination.

The appearance of the external lighting for the Crown Sydney Complex will be designed to create a subtle and sophisticated, highly controllable scheme that both softly reveals the intricacies of the world class architecture whilst also providing a memorable after dark image for the complex. The design is to be carried out with consideration of the immediate neighbourhood and the wider city context, including the Sydney Observatory.

The lighting will be controlled by a sophisticated architectural building wide control system that enables full dimming and scene setting dependent on the time of day/night, season or event, and available natural light in the surrounding environment.

1.4 Reference documents

Documents used and considered within this report include;

- NCC / BCA 2011 Energy Efficient Measures (Electrical) Section J6 – Artificial light and Power.
- Sydney Lights – Public Domain Design Code 2015 (refer to Section 4 for relevant extracts).
- AS1158.3.1-2005 Category P Lighting Performance and Design.
- AS4282-1997 Control of the obtrusive effects of outdoor lighting.
- The Rocks Lighting Policy 2009 – Harbour Foreshore Authority.

2 EXTERNAL LIGHTING

The Crown Sydney Hotel Resort external lighting can be divided into a number of key design elements which will require differing strategies and solutions to resolve the requirements of an International iconic building and the surrounding built environment.

2.1 Design Elements

The lighting elements covered by this report are generally as follows:

- Tower Facade Lighting;
- Lower and Upper level Terrace;
- Podium facade;
- Porte-Cochere;
- Ground Floor Terraces (Northwest, West, & Southwest);
- Waterfront Promenade.

2.2 Design Strategies to be employed

The progressive evolution of the external lighting design from concept design through to detailed design will require detailed modelling of lighting concepts to measure and visualise lighting outcomes. Introduction of specific lighting products will inform the designers of lighting flexibility and specific control solutions that will provide the finished overall visual effects. Key principles of the lighting strategy for the Crown Sydney Hotel Resort are set out below. These principles will help guide and shape all aspects of the detailed lighting design for the proposed development.

Text was taken from the “Sydney Lights – Public Domain Design Code 2015” to populate the below key principles, refer to Section 4 for the text extracts.

2.2.1 Key principles to minimise adverse impacts of light on the surrounding area

- **Principle 1** - Luminaires should be directed to focus light as required for specific applications and should not result in excessive light being directed externally from the site.
- **Principle 2** - Luminaires should only be turned on when required therefore conserving energy and minimising the unnecessary emission of greenhouse gases.
- **Principle 3** - Masking techniques are to be used where required to minimise stray light into the sky including baffles and glare shields. Lens selection is critical and is to be considered when selecting luminaires.
- **Principle 4** - Where possible, luminaires are to be full cut off style. Floodlighting of the building is not a good design strategy or philosophy.
- **Principle 5** - All light source colour temperatures are to be selected to ensure they do not have an unacceptable impact on the surrounding area.

2.2.2 Key principles to reinforce a sense of place:

- **Principle 6** - The lighting design is to be used to accentuate specific features of interest of the Crown Sydney Hotel Resort building.

- **Principle 7** - Lighting should not be uniform across the site but should utilise shadow and light to create focal points and engage the users.
- **Principle 8** - Lighting, guided by a coherent strategy, is to be designed to contribute to the identity of the Barangaroo foreshore and serve as a vehicle for promotion, attracting tourism and increasing night time patronage.
- **Principle 9** - All light source colour temperatures are to be selected to enhance the architectural quality, colour and texture of the built environment.
- **Principle 10** - Lighting should be designed and integrated into the architectural fabric and landscape design of the space.
- **Principle 11** - Lighting should respond to and highlight the uniqueness and character of spaces.
- **Principle 12** - Lighting should allow for experiencing the harbour at night-time in a safe and guided way, whilst allowing view across and to the water. Considerations shall be given to the use of low level pedestrian or furniture lighting to mark the water's edge whilst maintaining vistas.

3 PROJECT PROCESS AND OUTCOMES

The project process NDYLIGHT and the project design team would employ for this Crown Sydney Hotel Resort project is as follows:

3.1 Concept Design

Preparation of innovative and creative architectural lighting design solutions requires discussion with the architect and client, incorporating but not limited to the following:

- Evaluation of the proposed site in relation to the surrounding space, and identification of the prominent angles of the building which will be viewed from various locations;
- Investigation and presentation of benchmark lighting designs for buildings of a similar nature;
- Review and consideration of the current lighting strategy for Barangaroo South site so as to allow a degree of integration with other buildings and public areas on the site;
- Regular attendance at workshop design meetings with the architects and stakeholders to discuss potential concept design solutions through the use of design boards and multi-media presentation;
- Conceptual sketches to depict the proposed lighting solutions (developed through workshop design meetings), their visual continuity with adjacent spaces and their overall effect;
- Preliminary design calculations to be progressed to assess the effect of lighting solutions on the surrounding environment of the project; and
- External Lighting Strategic Approach to be updated to include design concepts describing the lighting effects, aiming and intent.

3.2 Design Development

Upon agreement of the concept design, the design development stage will progress as follows:

- Computer generated light modelling renders to refine and confirm the architectural lighting effect on the building and surrounding areas of Barangaroo South site.
- Computer generated light modelling calculations to confirm compliance with relevant standards and codes.
- Evaluation of the detailed concept design and implementing any amendments required (if any) to address identified light spill issues.
- Lighting design layouts on the architectural floor plans and elevations outlining luminaire placement and quantities.
- Sketches detail illustrating the integration of luminaires within architectural elements.
- Luminaire selection including lamp selection, mounting details and available finishes.
- Large scale installations should always be mocked up and trialed. This phase is invaluable in demonstrating the efficacy of solutions, and allowing the stakeholders to understand the intended lit effect.
- Complete design documentation and issued in a format suitable for tendering and installation
- Participation in formal presentations to stakeholders and interested parties.

- External Lighting Strategic Approach to be updated to include detailed design solutions:
 - Written descriptions for all external lighting elements within the design.
 - Where possible, localised calculations.
 - Where required, descriptions of the equipment used.

3.3 Construction and Post Practical Completion

During construction NDYLIGHT will oversee the aiming/focussing of lighting, and lighting control settings.

NDYLIGHT will attend site during the commissioning phase to evaluate and confirm the lighting control methodology is as per the design.

NDYLIGHT will prepare certification at the completion of the project confirming that the project meets the requirements of the design principals, relevant codes and standards.

4 CONCLUSION

The design of the lighting for the Crown Sydney Hotel Resort is not of sufficient completeness at present to allow an appropriate light spill report to be completed identifying any impacts the project may have on neighbouring properties and in particular the Sydney Observatory.

However we are confident that, as the design progresses, by applying and incorporating the good design principles, practices, standards and philosophies identified within this report, that the project will meet the requirements of State Significant Development Application (SSDA) clause C13 (*Lighting and Light Spill Report*) for the Crown Sydney Hotel Resort.

In order to assist with and allow Crown Sydney Hotel Resort to achieve that task of minimizing impact on neighbouring properties and the Sydney Observatory it may be appropriate to impose a condition of consent on the Development Application that states along the following lines: "Prior to the issue of the relevant Construction Certificate, a Lighting Strategy and Light Spill Report is to be submitted for approval by the Department of Planning and Environment. The report is to include, but not be limited to, full details of the lighting strategy. An assessment of the potential impact of the detailed proposed lighting strategy on the surrounding area including the Sydney Observatory is to identify and incorporate necessary mitigation measures to minimise any adverse lighting impacts to neighbouring properties."

5 APPENDIX 1 - SYDNEY LIGHTS – PUBLIC DOMAIN DESIGN CODE 2015 EXTRACTS:

The following are extracts from the Design Code.

Introduction

In addition to fulfilling functional lighting requirements this Code recognises the importance of sustainability, energy efficiency, greenhouse gas reduction and the role lighting can play to reinforce a sense of place and be a mode for creative and artistic expression.

Public lighting, guided by a coherent strategy, will contribute to the identity of the City and serve as a vehicle for promotion, for attracting tourism and increasing night time patronage.

Section 1.3 - Scope

The Code applies to exterior lighting of all streets, public spaces and public areas within the City of Sydney Local Government Area (LGA) that are under the City's control.

The Code also provides direction for external lighting schemes for private development that have implications on the public domain.

The City of Sydney also encourages the use of the Code in areas within its boundary that are not in its control, in order to achieve a coordinated and consistent lighting palette to create a coherent city image at night, support long term maintenance benefits and consistent lighting standards for the public domain.

Section 2.1 - Vision and Focus

The key aim of Sydney Lights is to develop a coordinated approach to the lighting of the City's public domain that contributes to a safe, active and sustainable City, reinforces a sense of place and encourages creative and artistic expression.

Underwriting this overall lighting vision, the Code sets out two strategic directions for the provision of public domain lighting:

Functional Use – *provide a co-ordinated and sustainable approach to the lighting of streets and public spaces and setting of lighting levels and standards to provide pedestrians, cyclists and vehicles with a safe and comfortable visual environment at night.*

This component is achieved through the application of a Standard Lighting Toolkit Palette, including technical requirements and standard City of Sydney luminaires.

Creative Lighting Overlay – *promote sustainable and energy efficient urban design lighting applications to enhance and define the city structure and its legibility at night time, improve the city image and make it an attractive place to visit.*

This component is achieved through the application of creative lighting solutions for targeted specialised lighting applications.

Section 2.3 - Public Domain Lighting – Design Considerations

Minimisation of Adverse Lighting Impacts

If used inappropriately, lighting can cause adverse impacts on the environment and spatial quality of an area. Luminaires can cause light pollution and spill light which can affect local biodiversity and clarity of astronomical observations. Luminaires can also cause discomfort glare if not used

correctly, which can affect adjacent residences, reduce visibility and cause distractions to both pedestrians and vehicle drivers.

Sky Glow

Urban 'sky glow' is the result of stray light, both direct and reflected, being scattered in the atmosphere and brightening the natural sky background level. This has the effect of concealing the stars in the spectacular Southern night skies in a haze of waste light.

The City recognises that the urban environment of a large city has competing interests in creating an inviting night time environment for its residents whilst also minimising the sky glow effect. The lighting principles in the Code are designed to achieve the following environmental standards:

- To minimise the escape of waste light into the night sky
- To minimise unnecessary energy consumption
- To promote a glare free environment for traffic and pedestrians
- To utilise the latest technology for effective conversion of light into illumination
- To create an aesthetic appearance for night-time illumination and lighting infrastructure during daylight hours.

Techniques to minimise adverse impacts of light:

- Luminaires should be directed to focus light as required for specific applications.
- Luminaires should only be turned on when required to conserve energy and minimise the unnecessary emission of greenhouse gases.
- Masking techniques are to be used where required to minimise stray light into the sky including baffles and glare shields. Lens selection should also be considered when selecting luminaries.
- Where possible, luminaires are to be full cut off fittings. Up light floodlighting of buildings not recommended.
- Consideration is to be given to reduce the impacts on local biodiversity from every lighting scheme.

Section 4 Creative Lighting Masterplan

4.1 Introduction

In addition to fulfilling functional lighting requirements this Code recognises the importance of lighting to reinforce a sense of place, influence the appearance and character of streetscapes, buildings, and public spaces, and contribute to a lively engaging city experience for people to enjoy.

Proposals for creative lighting applications are assessed by the City of Sydney on a case-by-case basis, taking into consideration the overall design, the site context, and compliance with the requirements of this Code.

4.2 Strategic Approach

To be energy efficient and visually effective the Code advocates a targeted use of creative lighting applications with the city's fabric appearing as a backdrop to selected highlighted places, precincts and elements. The Creative lighting applications comprise of three components:

- *City Structure and Precincts – lighting applications to reinforce the legibility of the city structure or highlight key city precincts;*
- *Distinctive Accents – lighting applications to individual elements across the city such as monuments, trees and landmark buildings;*
- *Special Lighting Elements – use of special non-standard lighting elements for functional lighting applications as a means to reinforce a distinctive sense of place and character;*

4.3 City Structure and Precincts

The overarching lighting strategy considers the pedestrian experience within the context of the night time environment. The following elements collectively facilitate the legibility of the city through illumination and navigation which can be read from afar, looking in, as well as at a pedestrian level.

4.3.1 City Centre Skyline

Major towers in the City Centre contribute to the identity of the City by providing a unique profile and expression of the skyline. Attention to building capitals and capping buildings with light has the most impact on the development of a strong night time skyline. The relationship between functional lighting applications, creative lighting applications and lighting for private developments needs to be considered and balanced to re-enforce the overall legibility of the city structure.

Roof Top Illumination

- *Care is to be taken in the methods of illumination to ensure that the City does not become over illuminated. The illumination of City buildings must be rationalised to effect a stronger, tidier appearance and in doing so create striking long distance vistas of the City.*
- *Close attention is to be paid to building capitals, as ‘capping’ the building with light creates a strong night-time skyline.*
- *Techniques and fixtures that minimise upward spill light and energy consumption are to be employed.*
- *Development Applications are to demonstrate, by photomontage, the effect in the field of view from distant vantage points.*
- *Where uplighting is proposed evidence must be provided to demonstrate that no waste spill light or obtrusive effects will result and that downlighting is not possible in the circumstances.*

4.3.2 Harbour Foreshore

Approach

Sydney’s beauty is often defined by its harbour and foreshore. Lighting applications can reinforce important aspects of the city’s relationship to the Harbour edge as well as promote the foreshore walk which acts as a linking element between existing and growing destinations such as Pyrmont, Darling Harbour, Barangaroo, Walsh Bay, The Rocks/Harbour Village North and Circular Quay.

Direction

The lighting strategy to the Foreshore walk should create an overall and consistent experience. Lighting should allow for experiencing the harbour at night-time in a safe and guided way, whilst

allowing view across and to the water. Considerations shall be given to the use of low level pedestrian or furniture lighting to mark the water's edge whilst maintaining vistas. The lighting scheme must acknowledge that the Foreshore walk land is not solely owned by the City of Sydney. The City of Sydney encourages the lighting strategy in this area to be adopted by other landowners to create consistency in the public domain.

4.3.3 Precincts & Village Main Streets

Primarily, the 'Lighting Overlay' strategy recognises Sydney as a network of distinctive precincts; each with their own unique program and identity. Together they provide a diverse range of attractions across the City.

These precincts are known as:

- *Chinatown*
- *Harbour Village North*
- *Oxford Street*
- *Kings Cross*
- *Greensquare Town Centre*

The lighting strategy in each precinct should be tailored to express the identity of the area. The full project scope and lighting applications will be subject to the preparation of individual lighting master plans for each distinctive City precinct.

4.4 Distinctive Accents

4.4.1 Approach

Distinctive Accents are considered as unique elements within the city, which do not qualify as precincts themselves but are integral to the overall legibility of the city and enhance the perception of urban form.

Distinctive Accents work to provide an active lighting environment across the city without disrupting the dominant impact and key identities of the precincts. Distinctive Accents hold their own unique identity and may take on varied roles though such as artistic interventions and landmarks.

The classification and application of Distinctive Accents will be assessed individually on a case by case basis by the City of Sydney and can include the following:

- *Civic buildings*
- *Monuments*
- *Civil Infrastructure including underpasses and pedestrian tunnels*
- *Parks*
- *Plazas*
- *Tree lighting*
- *Temporary Events*

- *Public Art*

Distinctive accents can be temporary, permanent or dynamic and can include a variety of lighting techniques such as:

- *Strategically selected façade lighting, using colour and media façade techniques where appropriate only;*
- *Concealed and integrated architectural lighting (e.g. lighting of heritage buildings or features)*
- *Lighting of public art, or creation of decorative lighting sculptures to enhance streetscapes and laneways;*
- *Projected images, which are capable of being choreographed to create changing effects;*
- *Temporary decorative lighting, associated with special events, cultural and civic festivities.*

If applied selectively, distinctive accent lighting responsibly addresses energy consumption, sky glow and other environmental impacts.

Civic Buildings

Lighting applications can call attention to distinctive civic buildings and other landmarks that are worthy of accentuation to help create reference points and aid in way-finding, particularly in areas outside the city centre.

Strategic Directions

- *Buildings with distinctive lighting applications are to be chosen selectively and in consultation with the City of Sydney. Most of the city should appear as a backdrop to a few special buildings and places that have distinctive lighting.*
- *Timer controls are to be used to limit the duration of distinctive lighting applications. All distinctive lighting is to be non-operable after 2am to reduce energy consumption and excessive light pollution.*
- *Light sources to light heritage building are to be incandescent in appearance with a colour temperature range of 2500K – 3200K to give a warm glow to historic architecture. Refer to 3.4.2 Heritage Areas for further information. All other light source colour temperatures are to be selected to enhance the architectural quality, colour and texture of the building.*

Lighting not considered appropriate:

- *Lighting on buildings which can detract from the architectural qualities (e.g. festoon lighting on architecturally expressive façade)*
- *Broad indiscriminate floodlighting of facades from large light sources located remotely from the building. These significantly impact on glare and sky glow. Floodlighting should be directed to enhance building architecture and detailing.*
- *Coloured lighting is only to be used in specific circumstances in consultation with the City of Sydney.*

Monuments

Lighting of selected public monuments within the City of Sydney can create a sense of prominence and express the history of an area.

Strategic Directions

- *Monuments are to be selected for significant public merit and to establish recognisable night time landmarks.*
- *Timer controls are to be used to limit the duration of distinctive lighting applications. All distinctive lighting is to be non-operable after 2am to reduce energy consumption and excessive light pollution.*
- *Light sources are to be of appropriate colour temperature to enhance the natural colour, materiality and texture of the monument. Consult with the City of Sydney for specific requirements.*
- *The lighting design is to accentuate specific features of interest and is not to floodlight.*
- *Luminaires should be located so they do not visually interfere with viewing the monument.*

Lighting not considered appropriate:

- *Broad indiscriminate floodlighting of monuments from large light sources located remotely from the building.*
- *Coloured lighting is only to be used in specific circumstances in consultation with the City of Sydney.*

Plazas

City Centre public plazas and squares, act as recognisable meeting places and spaces to sit and relax within the urban context of the City. Plazas provide opportunity for community activities, voicing opinions, sitting areas and meeting areas. They provide a pocket of space allowing reprieve from the busy main city streets. Lighting should therefore reflect a more subtle, integrated approach, with pedestrian focus.

A distinctive and creative approach may be taken for specific plazas in consultation with the City of Sydney.

Strategic Direction

- *Plaza lighting should be designed and integrated into the urban fabric and landscape design of the space.*
- *Lighting should respond to and highlight the uniqueness and character of each plaza.*
- *Luminaires should be concealed from view wherever possible and the day- time view of the fittings should be considered and minimised.*
- *Lighting should not be uniform across the site but should utilise shadow and light to create focal points and engage the users.*
- *Sculptures or public art within the plaza may be highlighted.*
- *Vertical façade lighting unique and appropriate to the style and scale of individual buildings and objects. In some instances façade lighting to contribute to pedestrian pathway lighting, if controlled and maintained by CoS.*
- *Street level lighting to be relative to façade brightness rather than uniform throughout.*
- *Tree lighting to enhance landscaped elements amongst the paved experience.*

- *Lighting to provide a series of pedestrian ‘moments’ throughout the site.*

Lighting not considered appropriate:

- *Flood-lit spaces with uniform brightness across the entire park.*
- *Use of solely pole lighting applications.*
- *Lighting that focusses on ground illumination only.*

Parks

Parks that have a unique character or are a night time destination have potential to include a creative lighting overlay. Parks provide an important social function within the City both during the day and in enhancing the night time economy. These areas require an individual lighting strategy that is to be developed to align with the parameters set out for general parks.

Strategic Direction

- *Meet the basic lighting requirements as defined in the functional lighting palette for a general park. The lighting types used to achieve these levels are open to the designer in conjunction with CoS. Luminaires must comply with the technical requirements outlined in Section Two.*
- *Heritage parks need to be considered taking into account existing heritage elements and in line with relevant heritage conservation plans and plans of management.*
- *A creative lighting overlay is encouraged through use of tree lighting, catenary lighting or furniture lighting.*
- *The design of up-light for trees and landscaping should consider existing site conditions to ensure limited impact on tree root zones.*
- *Provision should be made to implement a holistic lighting strategy for both general use and ‘event’ use. This may be the case for a park used for monthly markets. The ‘creative’ lighting overlay may be turned on for a specific period each month.*
- *The lighting scheme for all parks should consider lighting of the following elements; Main park entries, park perimeter, main pedestrian and cycle through pathways and surrounding areas, selected landscaped areas i.e. trees, furniture or public art/architectural elements.*
- *The lighting strategy should utilise both shadow and light to distinguish the park from the general streetscape and to provide direction and focus at night-time.*

Lighting not considered appropriate:

- *Flood-lit spaces with uniform brightness across the entire park*
- *Lighting limited to the main pathways only, with dark trees or bushes surrounding the pathway, without extending the light into the surrounding areas.*
- *Fairy / Festoon type lighting*

NDYLIGHT

NDYLIGHT: A specialist division of NDY Management Pty Limited
ABN 29 003 234 571
60 Miller Street
North Sydney NSW 2060

Telephone: +61 2 9928-6800
Facsimile: +61 2 9955-6900

www.ndylight.com

OFFICES

Australia:	Sydney, Melbourne, Brisbane, Perth, Canberra, Adelaide, Darwin, Gold Coast
New Zealand:	Auckland, Christchurch, Wellington
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