MIDDLE HEAD OVAL AMENITIES BUILDING LIGHTING DA REPORT

PROJECT 3608

REVISION B

6 MAY 2024

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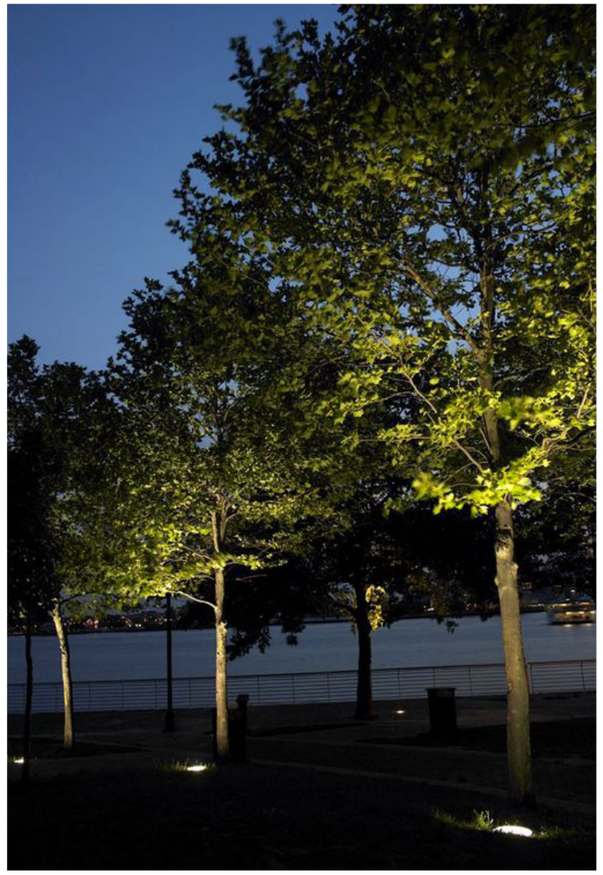
MOOD



KEY DESIGN PRINCIPLES
ENHANCING ARCHITECTURAL FORM THROUGH INTEGRATION

1 - Lune De Sang - Shed 2 (Lighting by Electrolight)
Chrofi Architects

Photography: Brett Boardman

This lighting report supports the DA application for the proposed Middle Head Oval Amenities Building and Landscape works.

The design aspirations of the lighting to the Middle Harbour Oval Amenities Building and associated Spectator Awning is to create a seamless expression of light that both enhaces the architectural form and achieves the functional lighting requirements.

Central to the design approach is illumination of the underside of the floating roofs, which creates a welcoming “lantern” effect that provides useful illumination within the structures as well as soft circulation light to the surrounding landscape areas.

The lighting within the Amenities Building is further supplemented by low level lighting interventions (such as mounted wall lights) which provide task illlumination to key areas within the building and keep the underside of the roof free of light sources. This provides an architecturally elegant solution that is also practical from an operational and maintenance perspective.

1 - Mollymook Residence (Lighting by Electrolight)

KEY DESIGN PRINCIPLES
PRESERVING THE DARK

1

Photography: Rohan Venn

The design of the external landscape lighting shall be a considered and subtle response to the unique local environment of Middle Head. This approach is well aligned to the key design principles for spill lighting mitigation, namely:

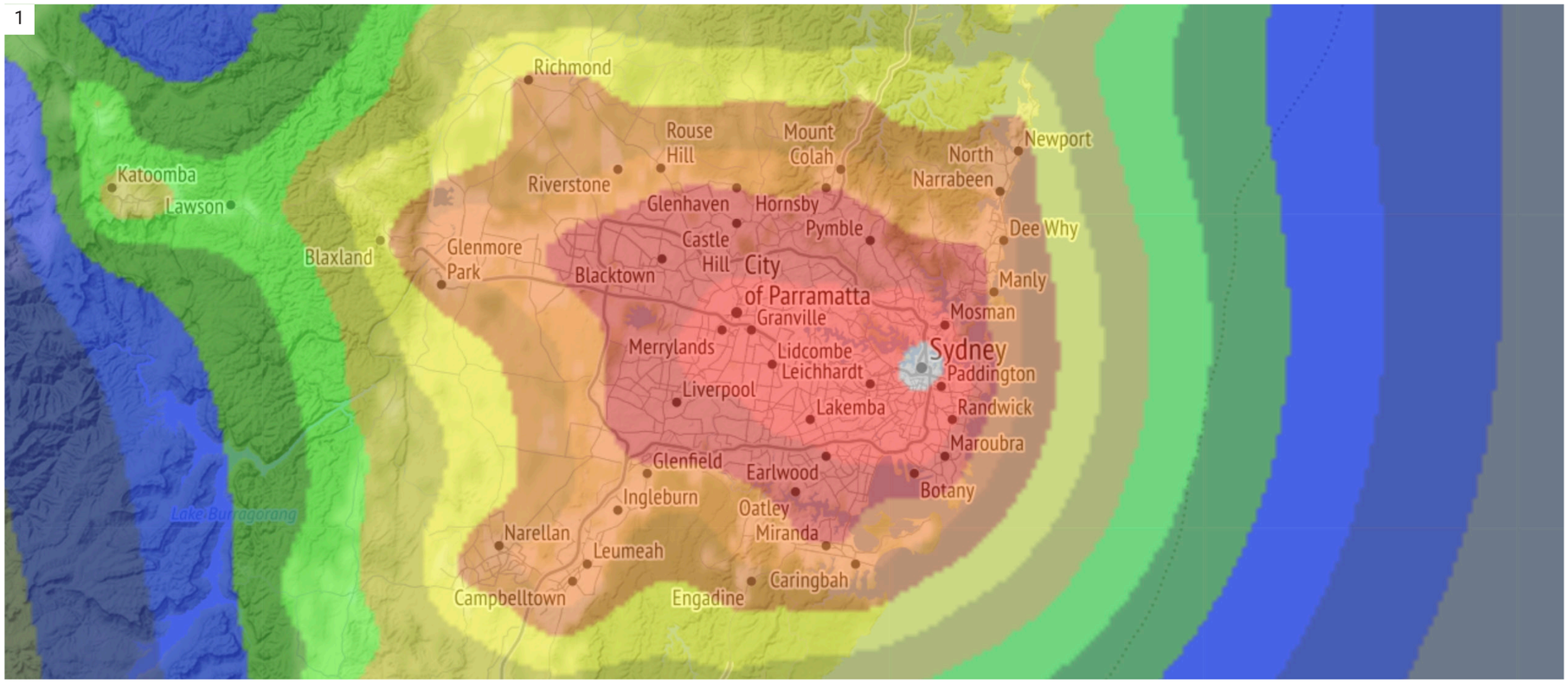
- Low target lighting levels to create an intimate and comfortable atmosphere, whilst still meeting safety and security requirements. This avoids over-lighting of spaces and minimises emission of waste light into the atmosphere through indirect reflection off surfaces.
- Use of latest technology luminaires with precise optical and glare control
- Use of a digital lighting control system to dim luminaires, both to prevent initial over-lighting and to adjust illumination levels based on occupancy, including time based control strategies
- Use of warm colour temperature light sources (3000K or less) to minimise the scattering of light in the atmosphere from shorter light wavelengths (ie blue light), and minimise the impact on astronomical observations and native nocturnal wildlife
- Designed in accordance with relevant Standards and Guidelines, including AS4282: Control of the obtrusive effects of outdoor lighting to ensure amenity is maintained in the area

1 - Sydney Light Pollution Map (Source: Dark Site Finder: David Lorenz and Royal Astronomical Society 2006)
2 - Light pollution affects the migratory patterns of birds, moths and other wildlife

KEY DESIGN PRINCIPLES
PROTECTING NATURE

Dark | Bright

1



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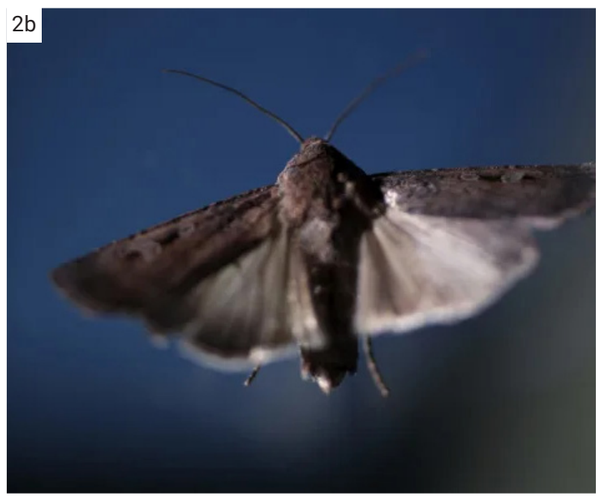

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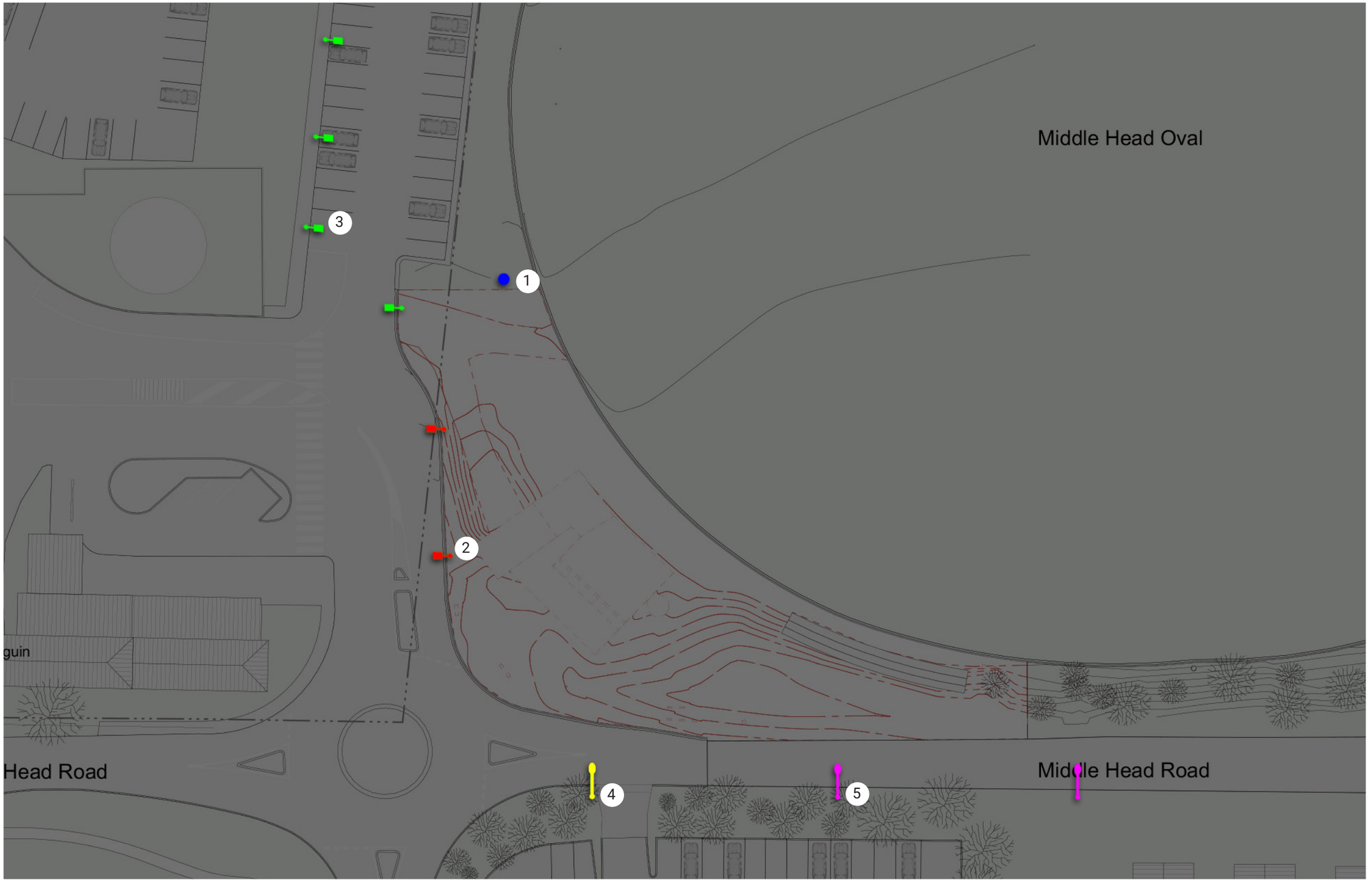
Effects on the natural environment include behavioural changes in animals, physiological changes in plants and animals and changes in the interactions between organisms. Light can affect plants and animals on land, in the water and animals in the air.

These changes can occur at very low light levels, for example some species change their behaviour with the waxing and waning of the moon. The physiological responses of some species may also be affected by the spectral composition of the light, particularly at short (blue) wavelengths.

The most effective way to avoid impacts on the environment is to keep naturally dark places dark, shield light sources from direct view and to use warmer coloured light that contains less blue light, which has been shown to be harmful to wildlife.

EXISTING CONDITIONS

1 - Existing Sports Lighting (relocated)
2 - HMAS Penguin Entry Road pole lighting (relocated TBC)
3 - Existing Carpark Lighting (out of scope)
4 - Existing Middle Head Rd Streetlighting - Type 1 (out of scope)
5 - Existing Middle Head Rd Streetlighting - Type 2 (out of scope)



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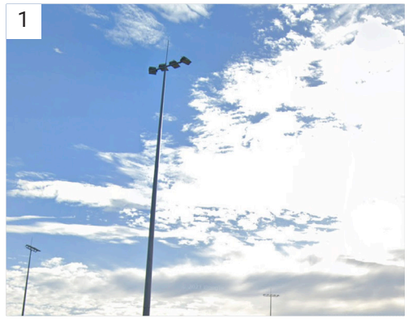

2 3

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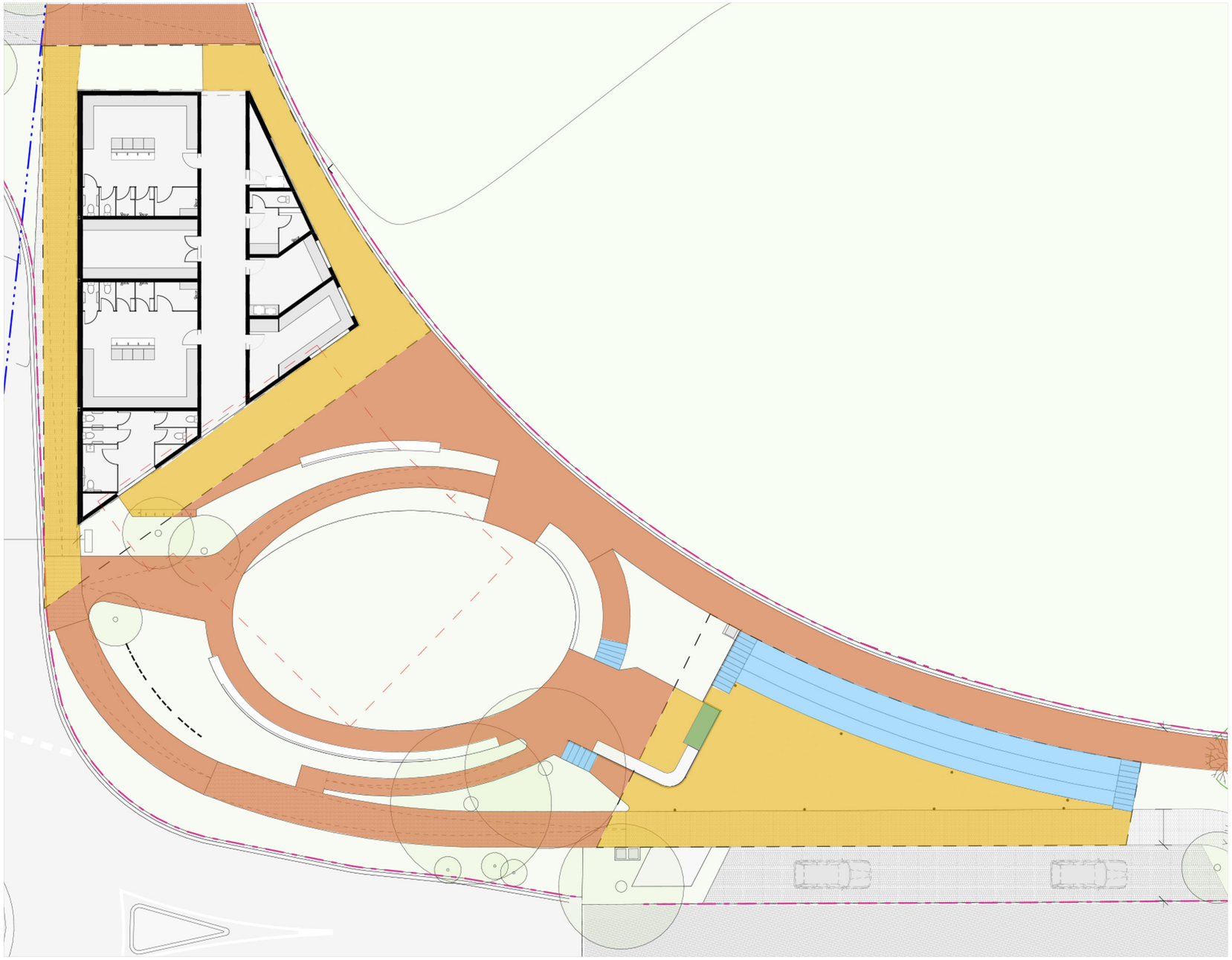
PP4

PE3

PA3

BBQ - 240 lux on counter

NB: Section 71 of the Sydney Harbour Federation Trust Act 2001 covers 'excluded State Law' this states that certain state laws do not apply to the Trust or to the property (including Trust Land) covering, but not exclusive of, matters of town planning, powers and functions of local Councils, standards applicable to the design, or manner of construction, of a building, structure or facility and the protection of the environment or of the natural and cultural heritage. Although for completeness and if there is a lack of Commonwealth guidance, NSW laws or standards in these matters have been assessed and reviewed as required.



TECHNICAL PARAMETERS
TARGET ILLUMINATION LEVELS

The lighting to the external landscape areas around the Amenities Building should be designed in accordance with AS/NZS 1158.3.1 (2020) *Lighting for roads and public spaces Pedestrian area (Category P) lighting - Performance and design requirements.*

Target illumination levels for the site have been selected to minimise spill light whilst still meeting safety and security requirements. This avoids over-lighting of spaces and minimises emission of waste light into the atmosphere. The AS/NZS 1158 technical parameters are outlined in the tables below:

AS1158 2005-2020 - Pathways (Including Cycleways)

Pathways (Including Cycleways)

General Description	Basic Operating Characteristics	Pedestrian/ cycle activity	Fear of Crime	Applicable Lighting Subcategory
Pedestrian or cycle orientated pathway, e.g. footpaths including those along roads, walkways, lanes, park paths, cyclist paths.	Pedestrian and or cycle traffic only	N/A	High	PP1
		High	Medium	PP2
		Medium	Medium	PP3
		Medium	Low	PP4
		Low	Low	PP5

AS1158 2005-2020 - Public Activity Areas (Excluding Car Parks)

Public Activity Areas (Excluding Car Parks)

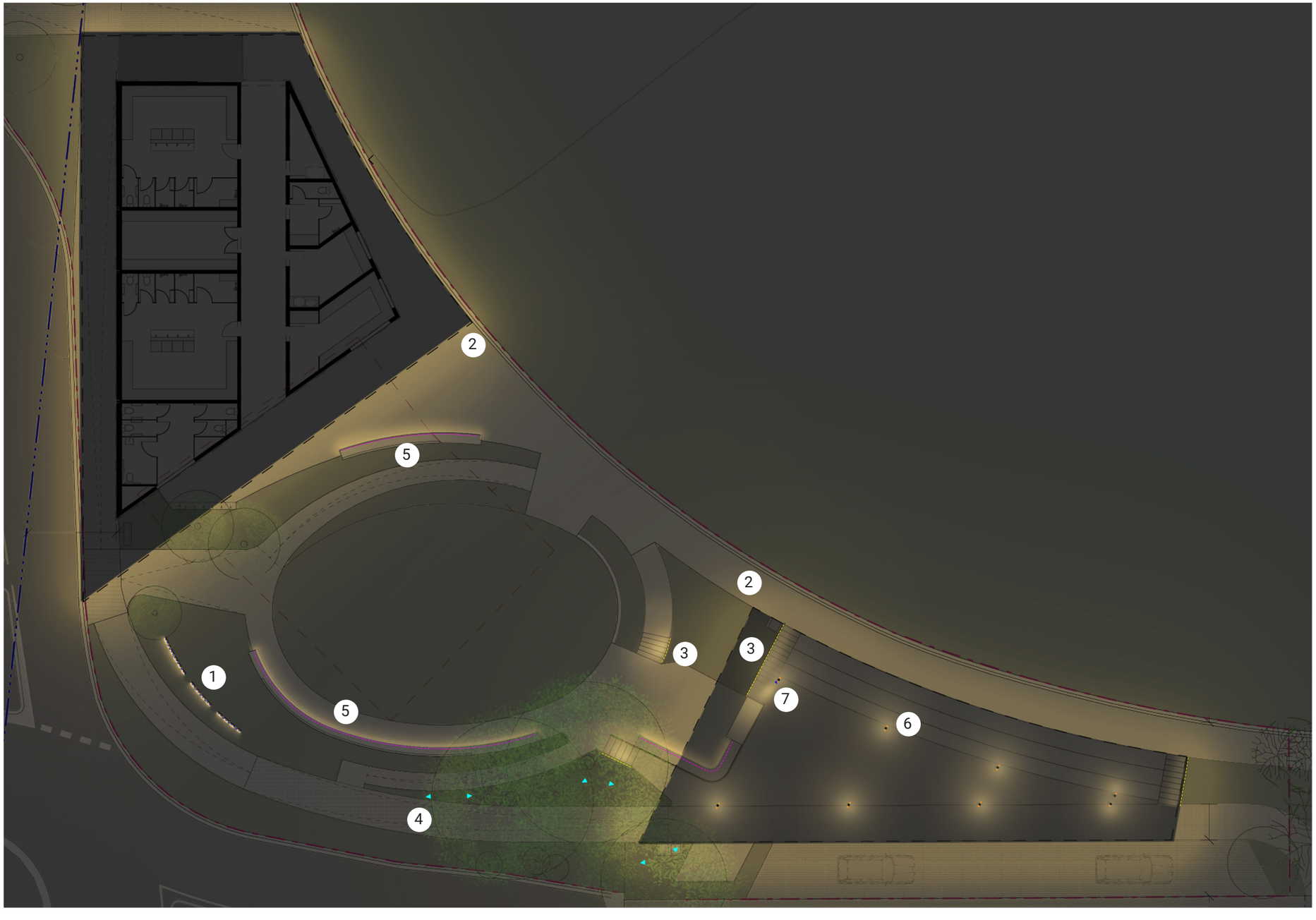
General Description	Basic Operating Characteristics	Night time vehicle movements	Fear of Crime	Applicable Lighting Subcategory
Areas primarily for pedestrian use, e.g. city, town, suburban centres, including outdoor shopping precincts, malls, open arcades, town squares, civic centres	Generally pedestrian movement only	N/A	High	PA1
		Medium	Medium	PA2
		Low	Low	PA3
Transport terminals and interchanges, service areas	Mixed pedestrian and vehicle movement	High	High	PA1
		Medium	Medium	PA2
		Low	Low	PA3

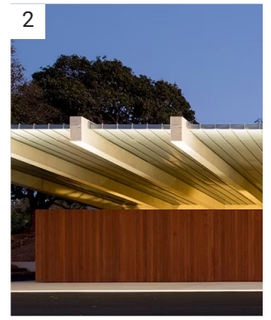
AS1158 - Lighting Technical Parameters

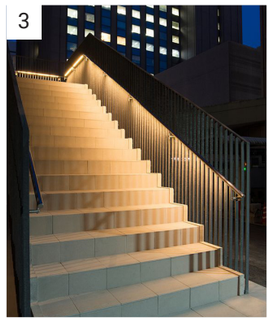
Lighting Subcategory	Average Horizontal Illuminance (Eh) lux	Point Horizontal Illuminance (Eph) lux	Illuminance (Horizontal)	Point Vertical Illuminance (Epv) lux
PP1	10	2	5	1
PP2	7	1	5	0.3
PP3	3	0.5	5	0.1
PP4	1.5	0.25	5	0.05
PP5	0.85	0.14	5	0.02
PA1	21	7	8	7
PA2	14	4	8	4
PA3	7	2	8	2
PE1	35	17.5	8	17.5
PE2	Same as for highest lighting subcategory applying to areas that abut the connecting element but, where forming part of a road or pathway, to be not less than subcategory PA3			
PE3	Same as for highest lighting subcategory applying to areas that abut the connecting element but, where forming part of a road or pathway, to be not less than subcategory PP3			

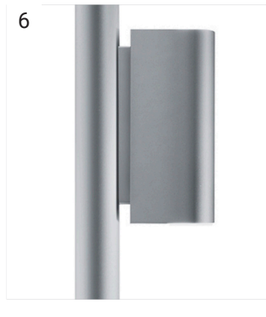
LANDSCAPE & SPECTATOR SHELTER
LIGHTING LAYOUT

1 - Illuminated Signage (Design TBC)
2 - Uplighting to Amenities Building/Spectator Structure providing illumination to surrounds
3 - Handrail lighting to stairs
4 - Uplighting to grove feature trees
5 - Under bench lighting
6 - Up/down column mounted lighting to Spectator Structure
7 - Column mounted spotlighting to BBQ



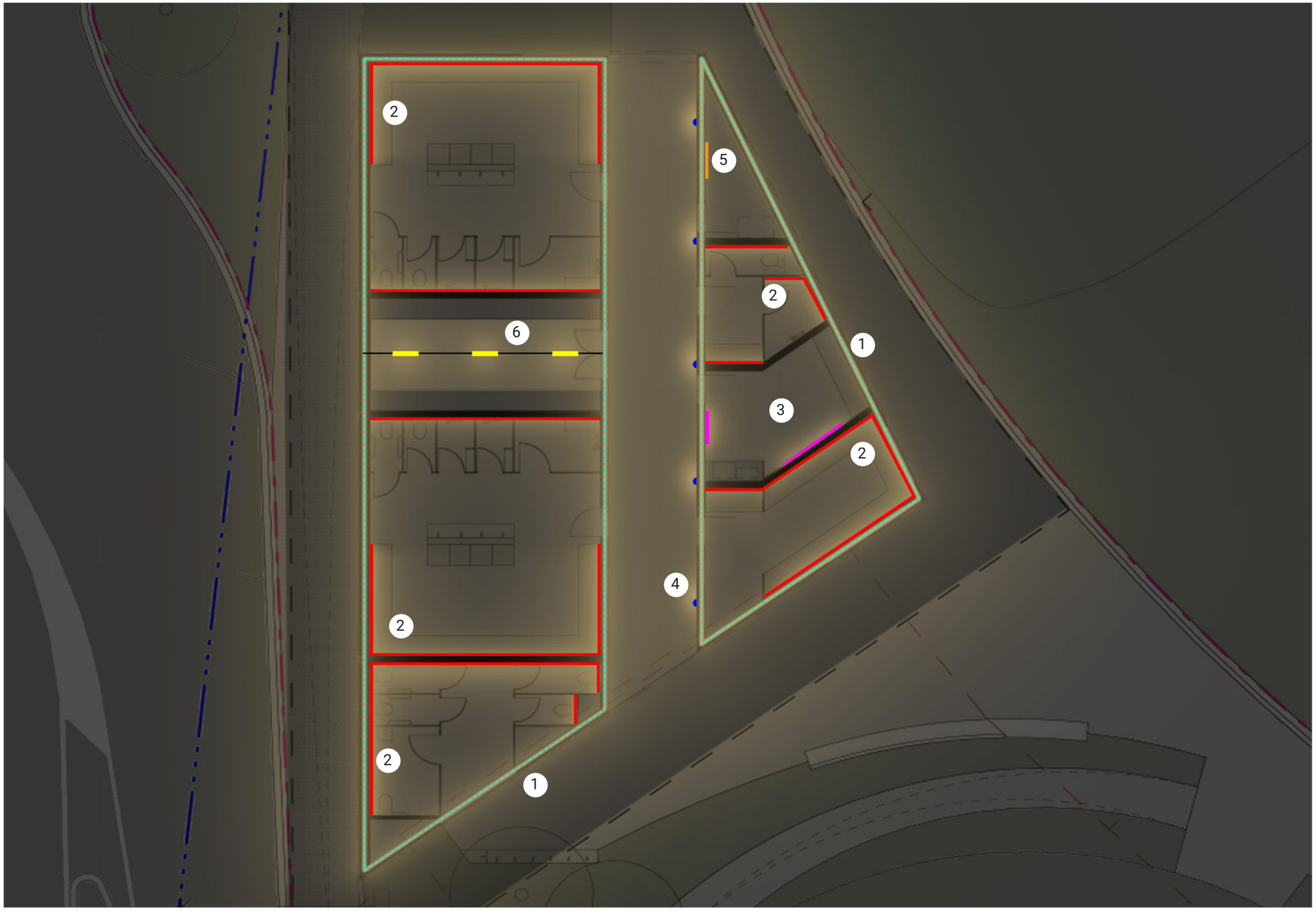






1 - Concealed uplighting to Amenities Building Roof
2 - Linear wall light (mounted at approx 2400 AFFL)
3 - Up/down Wall light to Admin office
4 - Low level wall lights to circulation corridor
5 - Wall mounted LED Batten light to utilities
6 - LED Batten lights mounted to unistrut in store room (mounted at approx 2400 AFFL)

AMENITIES BUILDING
LIGHTING LAYOUT



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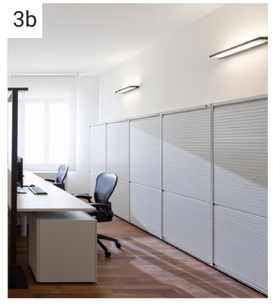

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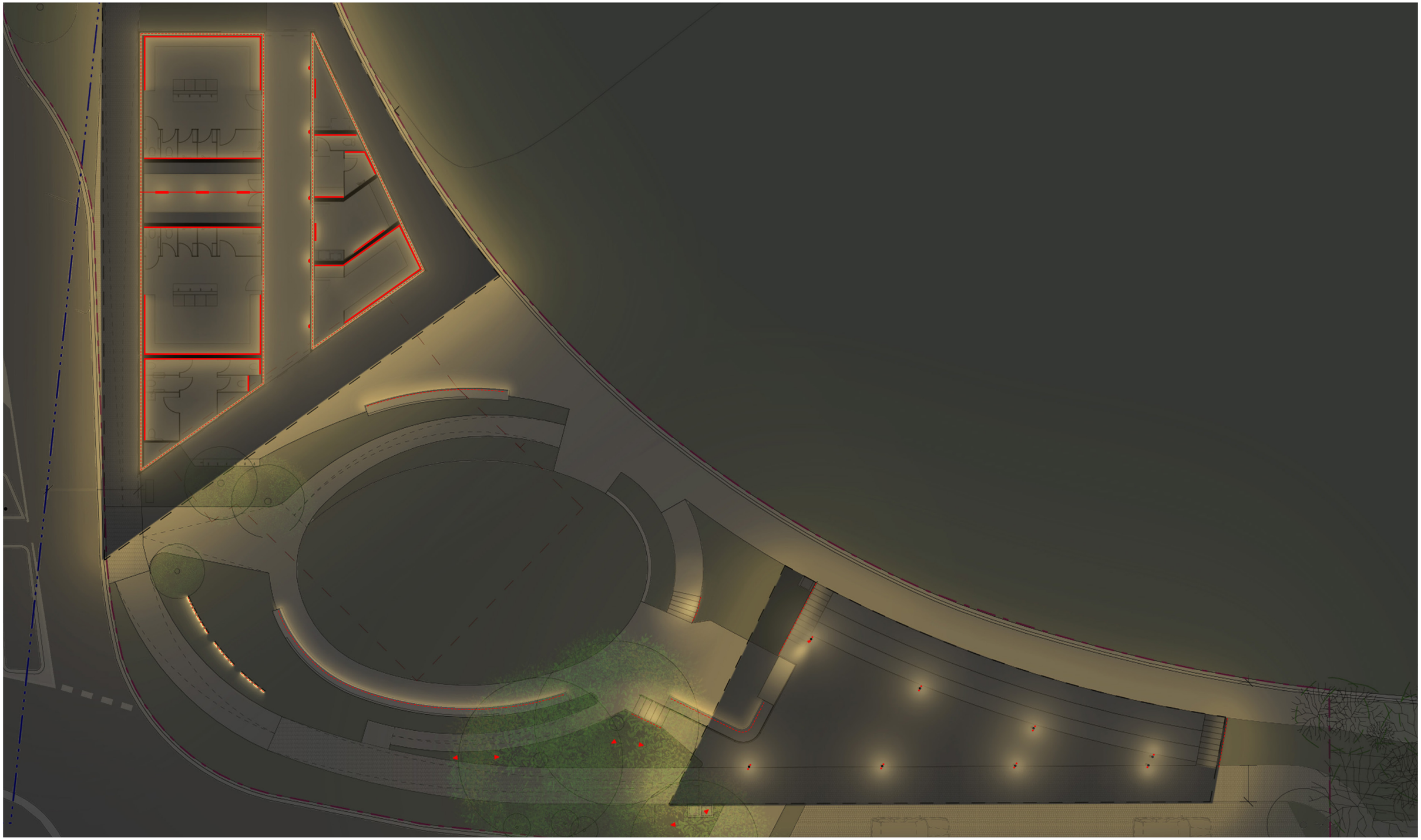
SUMMARY
OVERALL LIGHTING LAYOUT



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