JULY 2024

Taronga Zoo Sky Safari

Appendix K
Lighting Report

PREPARED BY

NDY
A TETRA TECH COMPANY

PREPARED FOR

TARONGA
CONSERVATION SOCIETY AUSTRALIA
For the Wild

NDYLIGHT

LIGHTING DESIGN

Taronga Zoo Sky Safari - Stations

Lighting Design Concept

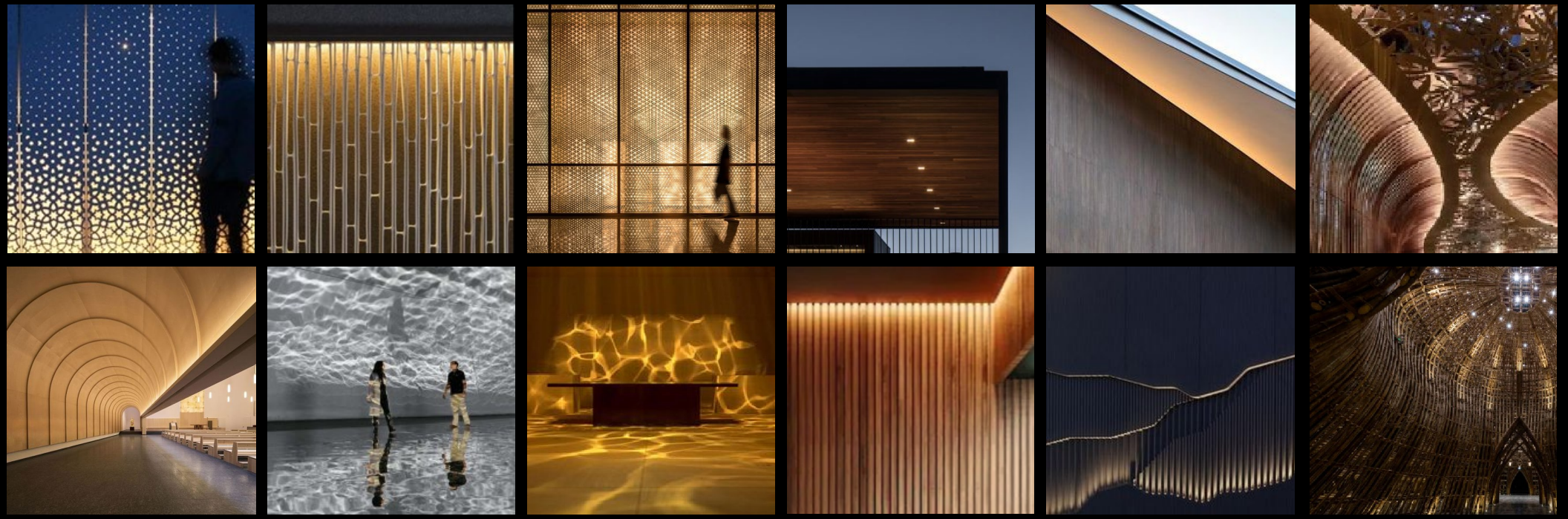
Concept Issue - 17.07.2024

Prepared by: Chris Cody – Associate NDYLIGHT Studio Manager

Taronga Sky Safari Lighting Design Response

Key lighting principles:

1. Layering of lighting for safe movement, wayfinding and to highlight texture, materiality and feature elements for ambient lighting comfort.
2. Emphasise the narrative for each station to activate station storytelling elements and create a dynamic experience for visitors.
3. Provide for a coordinated and fully integrated approach to lighting with the architecture to highlight architectural form and materiality
4. Establish a warm, comfortable and inviting evening welcome and night-time presence.
5. Minimise the impact of lighting to the harbour and surrounding zoo ecology through a flexible, low light output and warm ambient lighting approach.
6. Provide a sustainable, low maintenance, efficient and robust lighting scheme to assist with Taronga zoo's maintenance and operations.



Lighting Operational Brief

Lighting Technical Parameters:

150lux on covered ramps and platforms and uncovered ramps in accordance with AS 1428

Based on the operational brief provided, the following lighting scene settings and technical parameters are proposed to suit various operational times and requirements for the stations:

- Indicative Sunrise & Early Morning Sessions – Lighting to Operate During Business Hours and Switch off After hours
  - Daylight savings (AEDT): 6:00am to 9:30am
  - Non-daylight savings (AEST): 5:00am to 9:30am

- Zoo Operating Period – Lighting to Operate During Business Hours and Switch off After hours
  - 9:30am to 5:00pm (September to April)
  - 9:30am to 4:30pm (May to August)

- Indicative Sunset & Twilight Sessions – Various Lighting Event Modes
  - Daylight savings (AEDT): 5:00pm to 9:00pm
  - Non-daylight savings (AEST): 5:00pm to 7:00pm
  - Weekends (Fri-Sun) + Special Events: 5:00pm to 12:00am

- Indicative Special Events (i.e Vivid): 5:00pm to 12:00am
- An additional scene setting for cleaning and maintenance mode shall be allowed for: Maintenance will occur between 6:00pm – 6:00am.

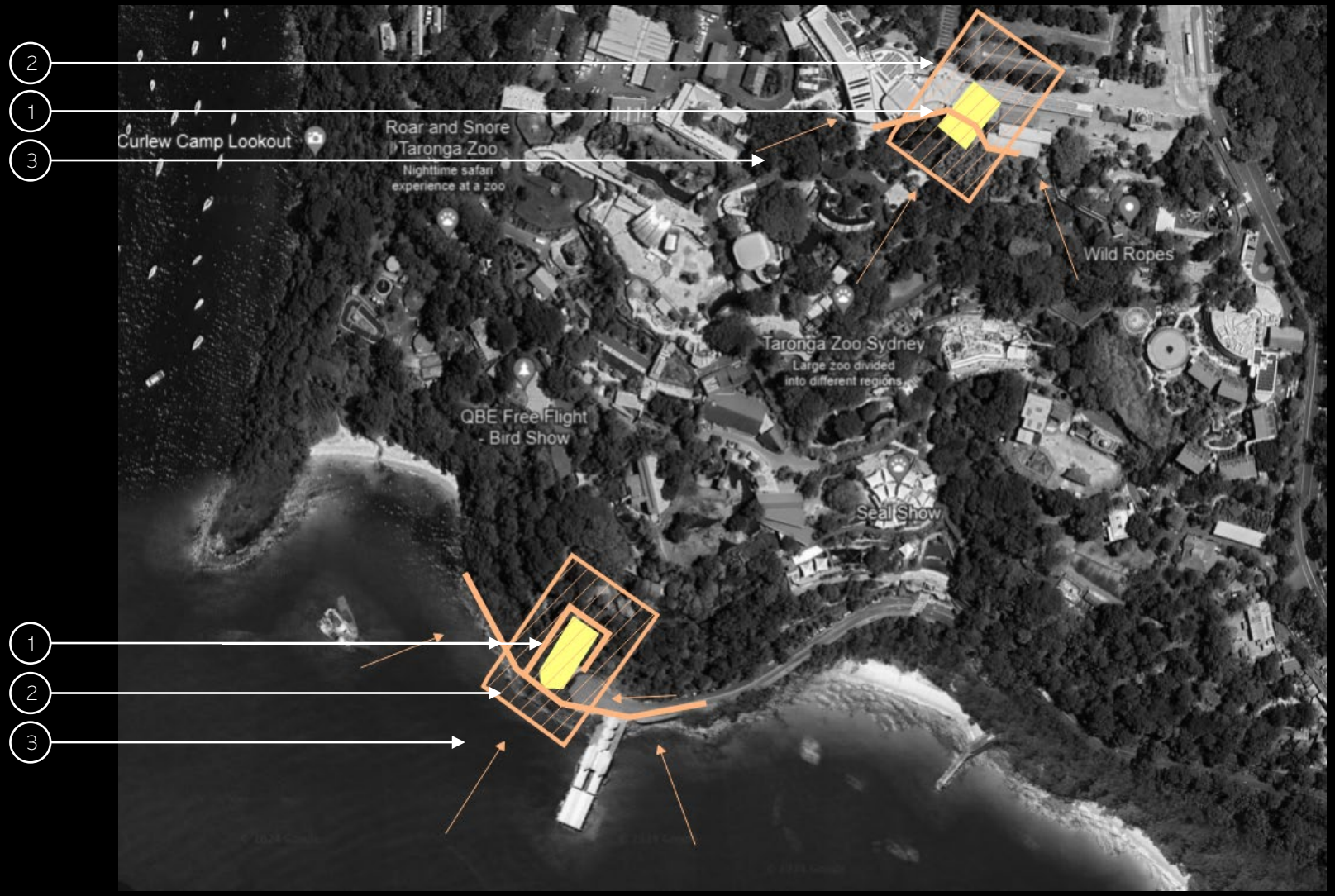
Lighting Site Assessment and Obtrusive Light Considerations

1. Ecological zone surrounding each station – AS4282:2019
2. Upward waste light minimisation – AS4282:2019 and Project Di-5 light pollution target.
3. Visual Impact - Minimisation of light spill and luminous intensity from exterior viewpoints including the harbour, surrounding wildlife, surrounding residential, surrounding roadways and pedestrian pathways

Dis-5	Light pollution	1	Measures to prevent light spill during construction have been identified and implemented
			The lighting design for operation prevents horizontal light spill through compliance with the numerical limits for obtrusive light in Tables 2.1 and 2.2 of AS4282.
			The lighting design for operation prevents upward light spill by ensuring that, relative to its particular mounting orientation, 95% (by number) of external public lighting luminaires within the project boundary have an Upward Light Ratio less than 5% (for roads and public spaces this must be less than 3% in accordance with AS1158).

Extract from Infrastructure ESD Brief – Dis-5 Light Pollution

Formal report submissions for obtrusive light, lighting impact assessments and mitigation measures will be undertaken during further design development phases.



Site Plan

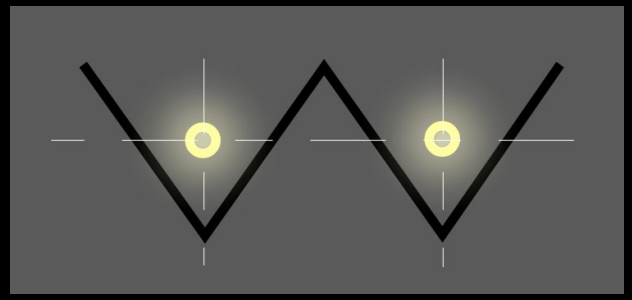
Lighting Design Response: Nature Station

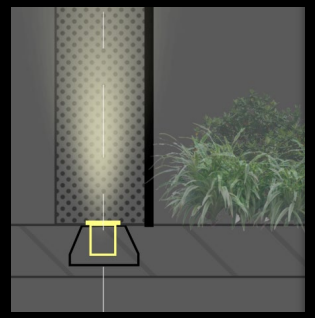
Nature Station

Key Plan: Nature Station

Lighting Design Response: Nature Station

Ground recessed discreet uplights to provide a soft glow of illuminance to the perforated screen feature, to emphasise the colour, form and materiality of the feature screen. Lighting to create silhouette effect through screen pattern and provide soft indirect illuminance to the underside of the pergola soffit





Indicative Lighting Plan, Image and Section Detail

Indicative Lighting Render

Key Plan: Nature Station

Lighting Design Response: Nature Station

Ceiling surface or recessed downlights to provide general functional lighting to the station platform and pathways.

Note: Downlights to be positioned offset from wall to minimise potential reflection on digital advertising at rear wall – TBC by client

Indicative Luminaire Type and Reference Image

Indicative Lighting Render

Key Plan: Nature Station

Lighting Design Response: Nature Station

Soft uplighting to trees to provide a dim indirect wash to the tree trunks and canopies. Note: Exact dimming levels for uplighting to be reviewed as part of the design development phase to meet Dis-5 requirement.

Indicative Reference Image and Luminaire Type

Indicative Lighting Render

Key Plan: Nature Station

Lighting Design Response: Nature Station

Note: Potential location for illuminated signage, provided by others. Signage to have 3000K CCT light source to align to the architectural lighting design for the stations

Indicative Lighting Render

Key Plan: Nature Station

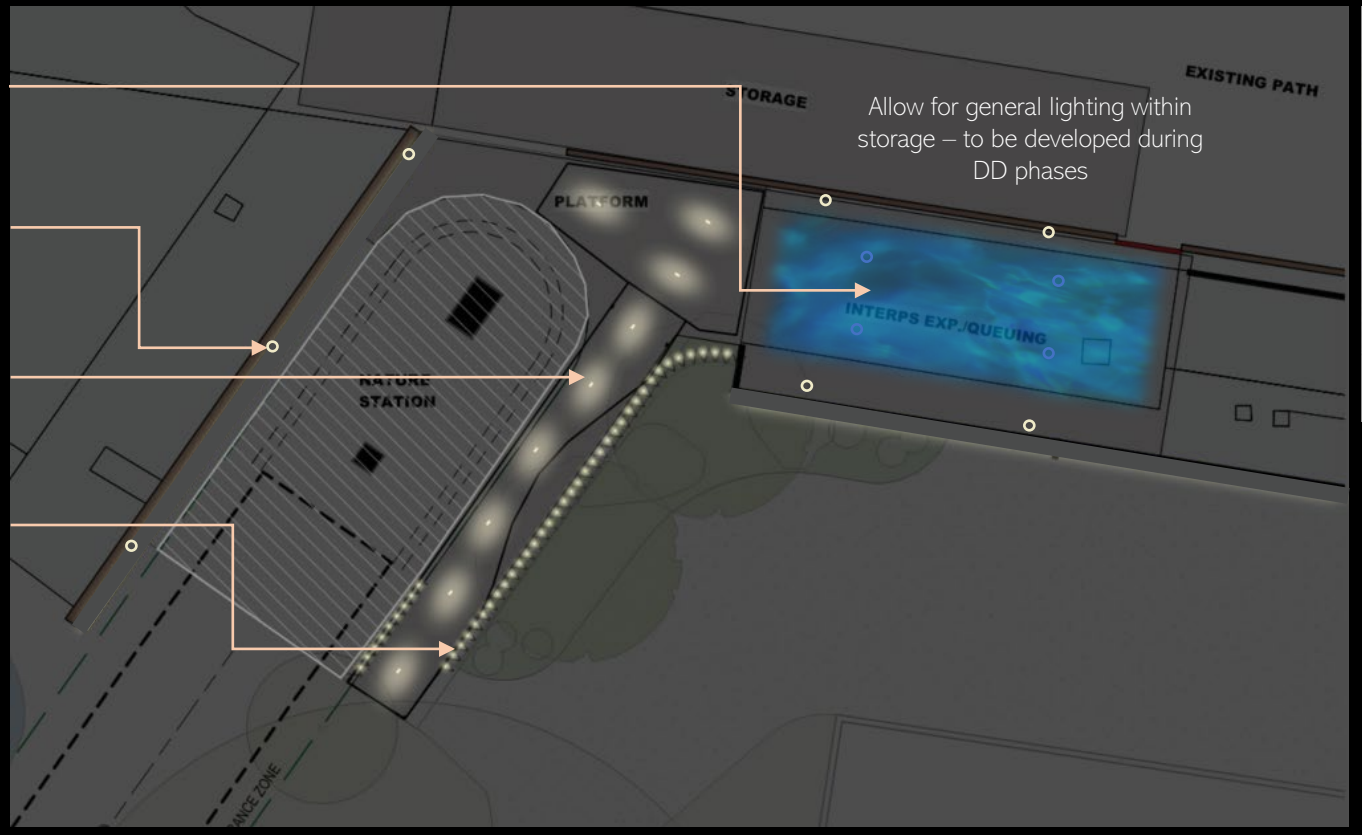
Lighting Design Response: Nature Station

OPTION: Potential projector lighting to the interps zone to provide for dynamic feature lighting to the queuing area floor – by others. Allow for power for future provision. To be coordinated and developed with the public art strategy design.

Wall mounted lighting to provide general lighting to uncovered sections of the platform and interps zone. Lighting to provide illuminance to platform for safe movement and wayfinding.

Discreet blade-style downlights recessed in the pergola structure to provide illuminance to the platform for safe movement and wayfinding.

Ground recessed discreet uplights to provide a soft glow of illuminance to the perforated screen feature, to emphasise the colour, form and materiality of the feature screen. Lighting to create silhouette effect through screen pattern and provide soft indirect illuminance to the underside of the pergola soffit

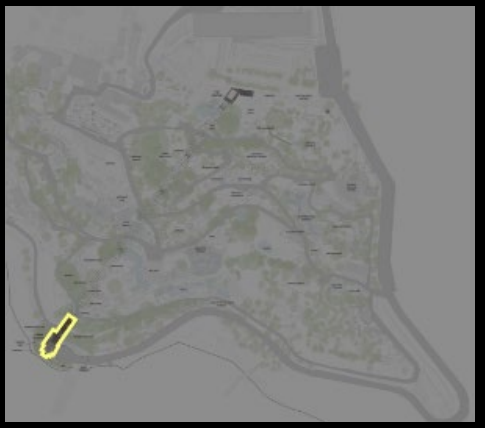


Indicative Lighting Plan

Key Plan: Nature Station

Lighting Design Response: Lower Station

Lower Station

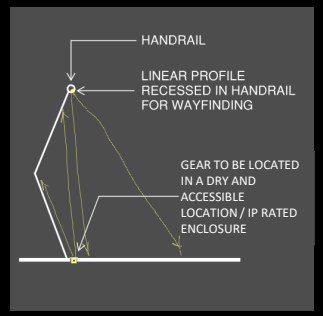


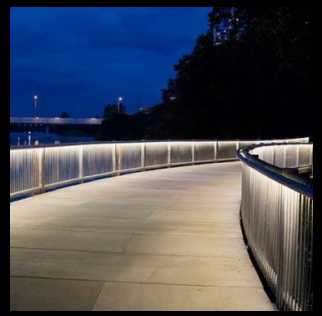
Key Plan: Lower Station

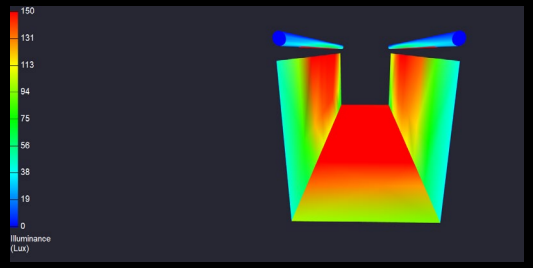
Lighting Design Response: Lower Station

Continuous Linear Lighting in Handrail

Linear profile integrated within handrail to provide uniform illuminance on the ramp for safe movement and wayfinding. Note: Exact extent of handrail lighting to the upper pathway is subject to further design development.

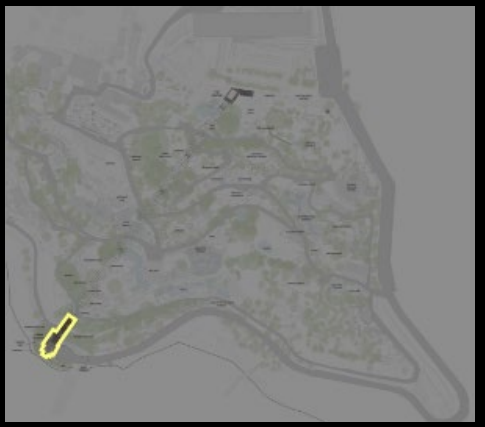




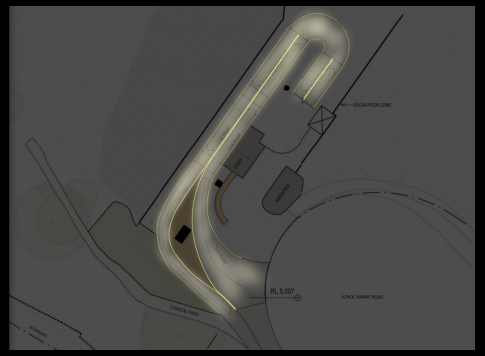


Indicative Lighting Calculation, Image and Section Detail

Indicative Lighting Render



Key Plan: Lower Station

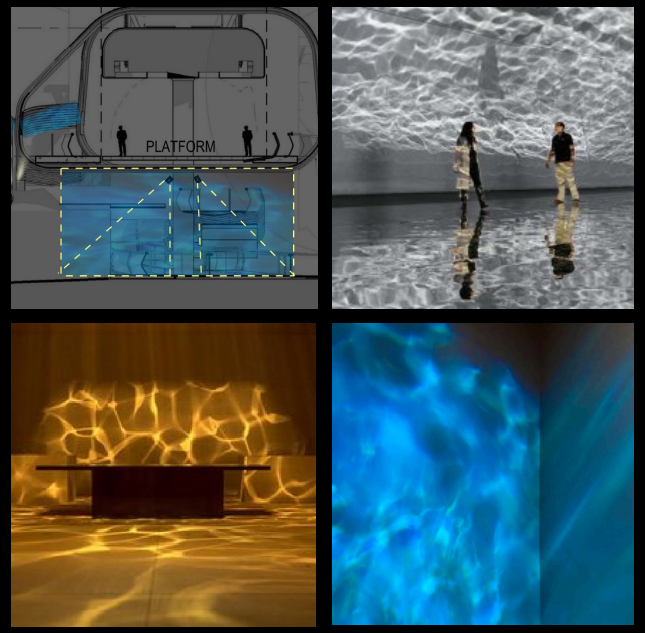


Indicative Lighting Plan

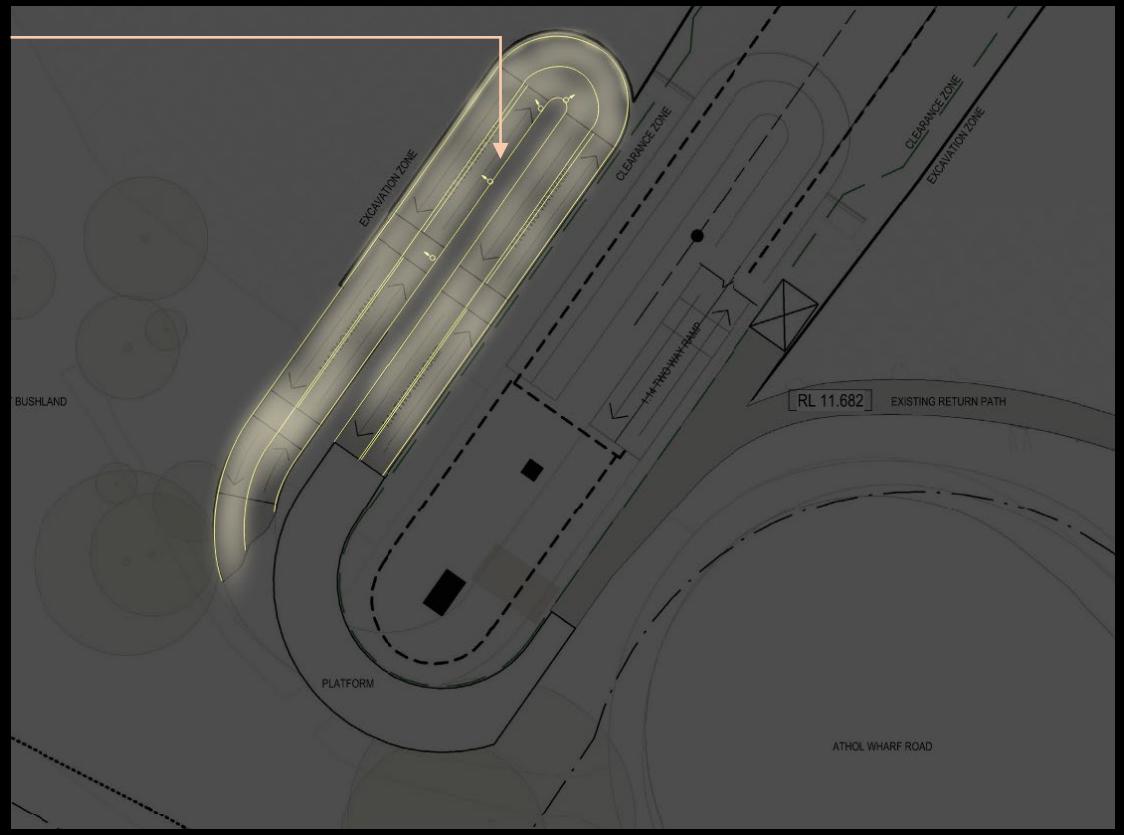
Lighting Design Response: Lower Station Undercroft Thematic Lighting

Dynamic Lighting to Underside of Station and Canopy

Projectors mounted to the underside of the ramp for projected patterns of light on the surface of the excavation – by others. Allow for power for future provision. To be coordinated and developed with the public art strategy design.

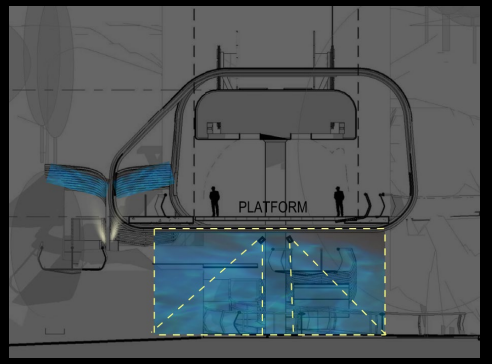


Indicative Lighting Section, Image and Section Detail



Indicative Lighting Plan

Key Plan: Lower Station

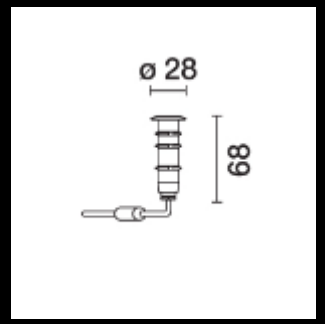


Indicative Lighting Section

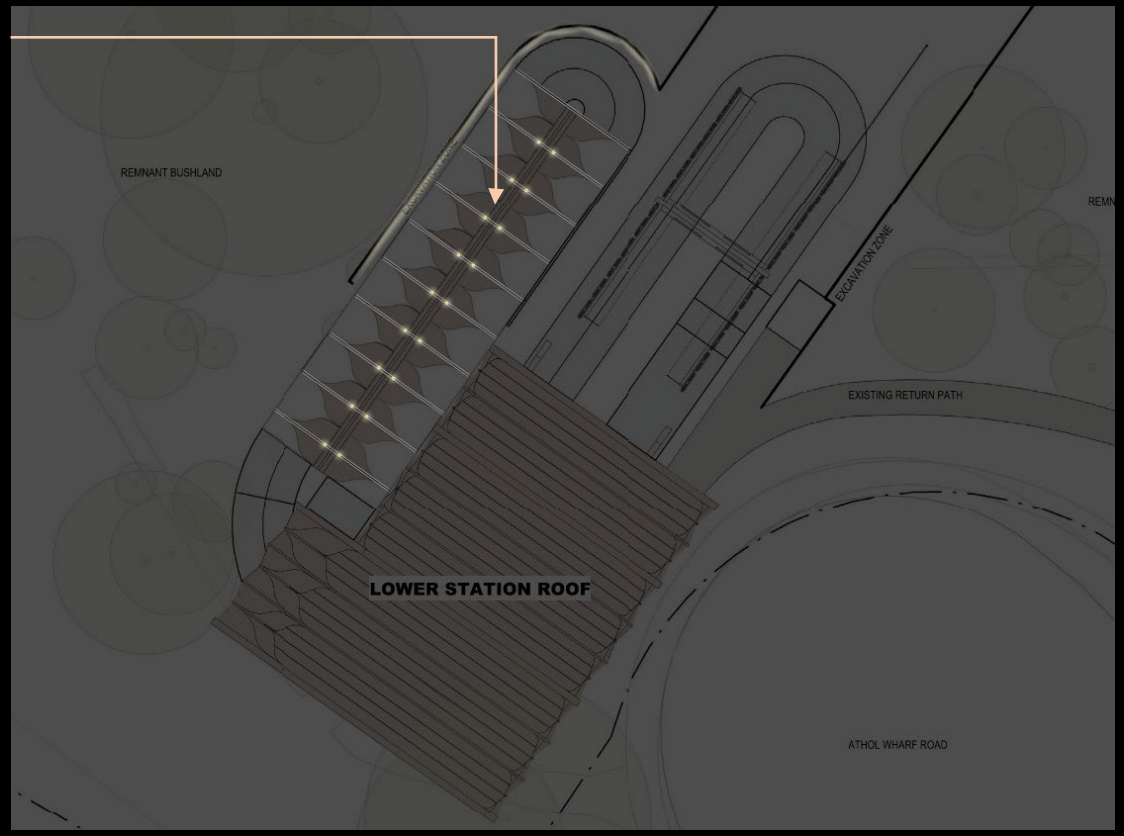
Lighting Design Response: Lower Station Canopy Feature Lighting

Discreet Narrow Beam Uplight to Accent Structure

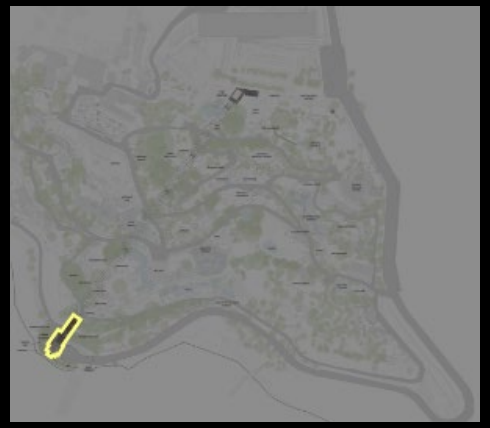
Miniature recessed spotlights mounted at the base of the vertical structural supports to provide subtle emphasis to the ribbed structure of the canopy. Luminaires to be mounted in an “box” detail at the base of the columns.



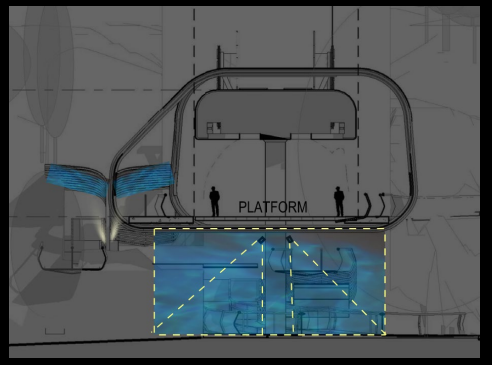
Indicative Luminaire Type and Reference Image



Indicative Lighting Plan



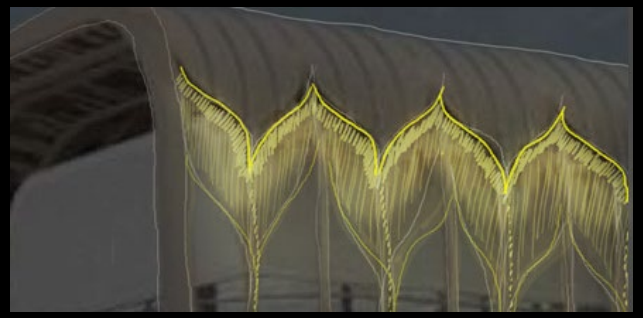
Key Plan: Lower Station

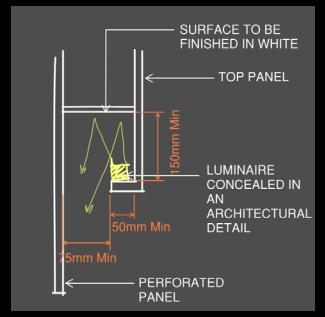


Indicative Lighting Section

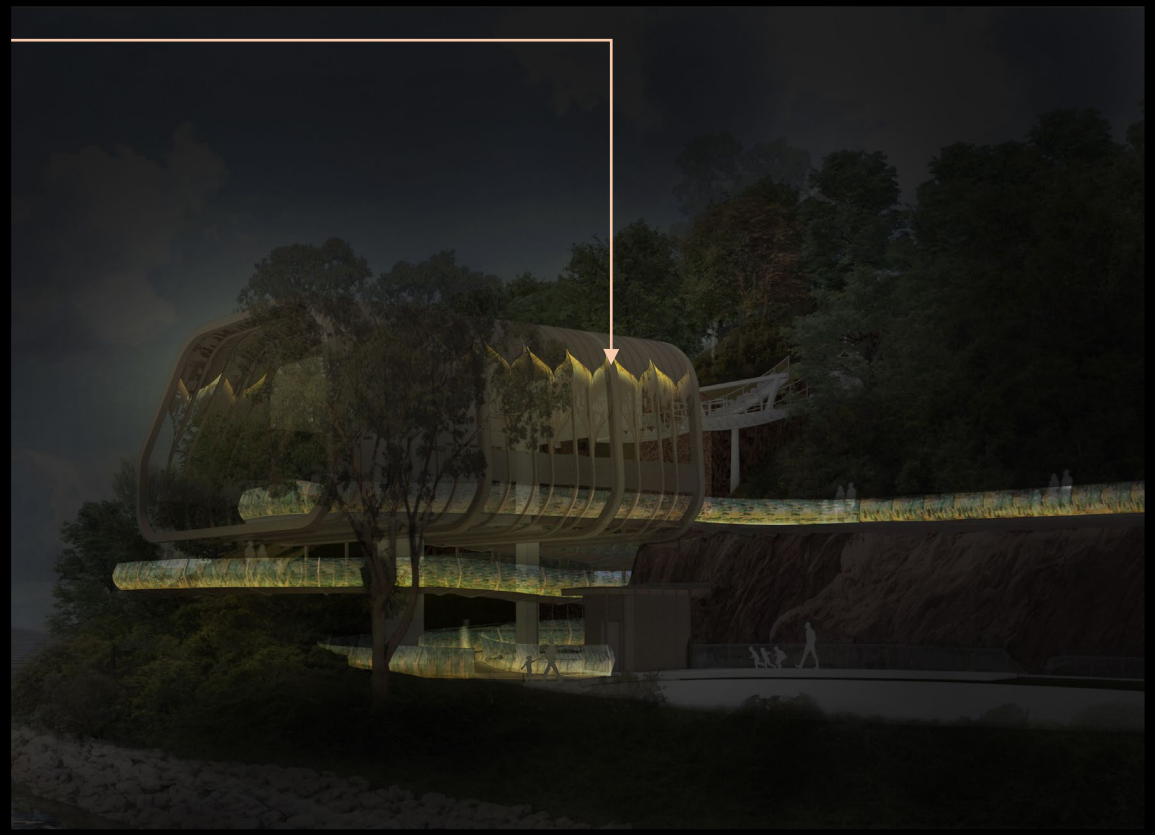
Lighting Design Response: Lower Station Integrated Skin Lighting Option

OPTION: Flexible linear profile integrated in an architectural detail under the top panel for a subtle glow of light to emphasize the petal form, texture and materiality, and to create a subtle visual feature along the waterfront.

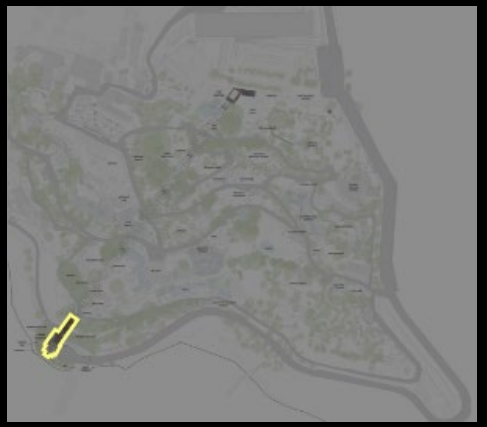




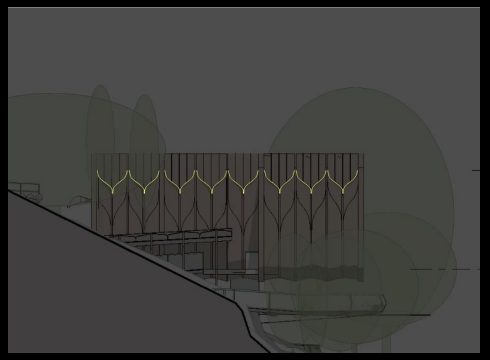
Indicative Lighting Images and Section Detail



Indicative Lighting Render



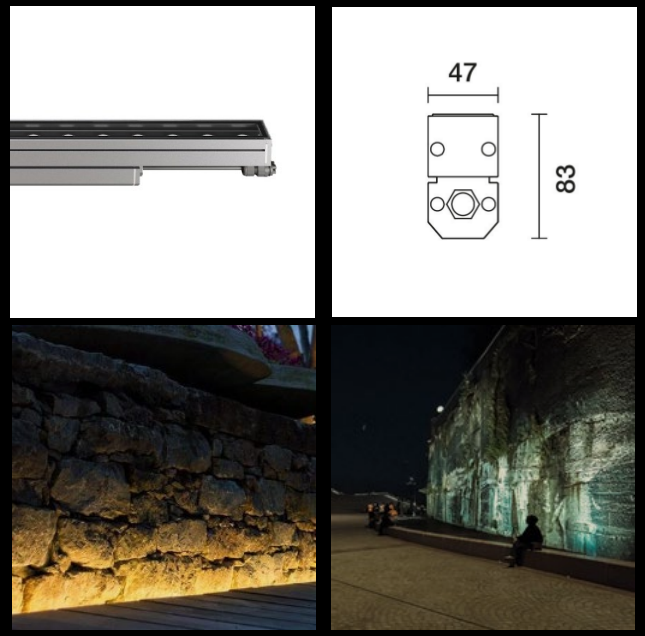
Key Plan: Lower Station



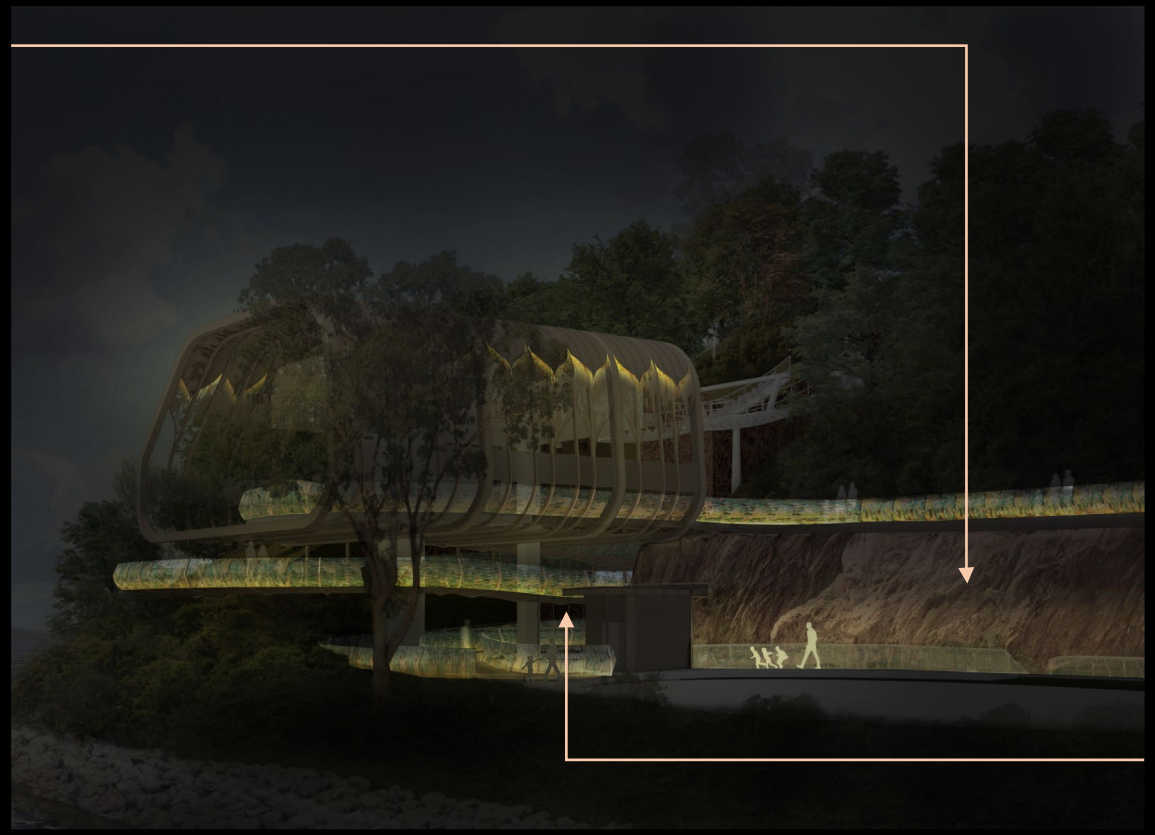
Indicative Lighting Section

Lighting Design Response: Lower Station Sandstone Wall Lighting Option

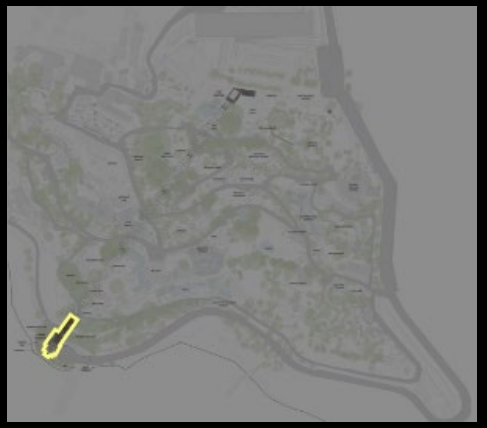
OPTION: Adjustable linear grazer profile concealed at ground level, between pathway and wall, to provide a soft graze of light to the texture of the rock shear wall and provide for wayfinding. Lighting to be dimmed to a low level for soft wash only – exact dimming levels to be determined during design development. Mock-up required on site during later phases.



Indicative Lighting Images and Luminaire Type



Indicative Lighting Render



Key Plan: Lower Station

Note: Linear profile to extend beneath the station to illuminate the full extent of the rock shear wall

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