



20/09/2022

The Planning Secretary
NSW Department of Planning & Environment
320 Pitt Street
Sydney, NSW 2000

Att: Cameron Sargent

Dear Cameron,

Re: 20-0527 – Taronga Zoo Sydney Wildlife Hospital [SSD-17655146] - SDRP Response

The proponent and design team attended and presented at the State Review Design Panel [SDRP-631] for the above mentioned project on Wednesday 14th September 2022. We thank the panel for their time and considered feedback on the day. In response to the panel feedback received at the presentation, we provide a formal response and additional information for the panel's consideration.

1. Project in Context

Provide further consideration of the escarpment context – how does the building sit within the broader Sydney Harbour context and landscape spaces within the Zoo. Recommendation to build and enhance the landscape setting

Response:

The Taronga Wildlife Hospital [TWH] building site is located centrally within the 28 hectares of bushland of the zoo campus. Nestled into the topography, the building is designed to complement and respect the existing landscape and heritage context, on both a micro and macro scale. A considered site analysis was undertaken in the early design phase, to fully appreciate the full site opportunities and constraints. The location of the TWH aims to create a conservation and education hub with connections to both the Taronga Institute of Science and Learning and critical back of house animal care facilities.

Careful consideration was given to the visual impact of the structures from key vantage viewing points from Sydney Harbour. There is very minimal visual impact on the existing landscape, and the building is barely visible from key harbour vantage points. The building is nestled within the overall tree canopies, with glimpses to the timber canopy glulam structure visible from afar.

Immediately adjacent to the building site is the existing bushland area, identified as a heritage item to be retained. A new walkway through the bushland is proposed to connect associated functions between the proposed Hospital and the existing Taronga Institute of Science and Learning building. This is proposed to be a slightly elevated boardwalk style to maintain light, air, and oxygen to the existing ground plane. The bushland area is identified as remnant Angophora Costata Association within the Landscape Management Plan [2006].

The regeneration of the bushland area is a driver in the project to build and enhance upon the existing landscape setting of TWH and the restoration of the remnant bushland in this area. This language is continued as a 'bushland' character across the plaza to nestle the hospital within the indigenous forest character. This is further described 3. *Public Plaza Area* section below.

Immediately to the south of the site, at the entry to the public forecourt, is an existing heritage Bangalay tree. Design consideration was given to the retention of the existing Bangalay tree and the planting of two new Bangalay trees immediately adjacent. The intention is that as these newly planted trees will develop in height and canopy width, it will assist in visual masking of the facility from southern and easterly aspects.

The building will replace the existing Reptile World complex which is redundant due to the recently approved Reptile and Amphibian Centre located more centrally within the Zoo. The topography of the site is not intended to be altered significantly in order to maintain the inter relationship of built forms across the whole of the Taronga Zoo site.



Image 01: Aerial view of Taronga zoo campus, site outline in red.



Image 02: Visual impact photograph from Sydney Harbour. Visible portion of *existing* building shown in blue. Visible portion of *proposed* building outline in Orange.



Image 03: Landscape Site Analysis diagram drawing AA-H0502



Image 04: Site section - West / East

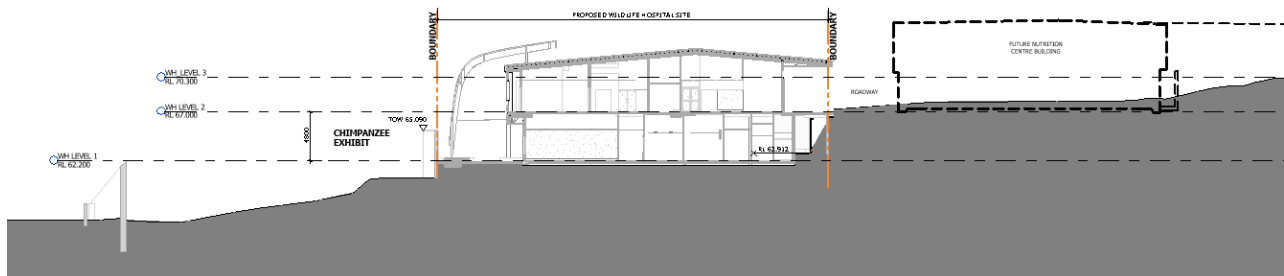


Image 05: Site section - North / South



Image 06: Public Plaza Floor Plan [Eximia Design] L-DA-13 - Bangalay Tree Location Diagram

2. The Canopy

Investigate and option further design solutions that may explore the following:

- introduce a real canopy and woodland space, taking cues from the adjacent woodland landscape
- columns are cluttering the space
- consider a sense of space and sky beyond
- further exploration and testing of the canopy – testing shade, glare, wind, views, inviting people into the space, sustainability and materiality

Response:

The canopy, represented as a strong and defined architectural element, is one of the key elements of Taronga's project brief from the project inception. The insertion of the Taronga Wildlife Hospital within the guest experience demanded that the building provide an all weather public outdoor space that enabled guests to experience the Hospital in all seasons. The provision of a large weather protected public gathering space is a critical project requirement. As there is not currently any large weather protected gathering spaces within the zoo campus, this project provides the opportunity to create such a space and strengthen the urban design and public amenity of the zoo as a whole. The canopy will provide guests a destination of respite within the zoo, that is an addition to the primary function of the Hospital.

The canopy design has been through a rigorous and considered design process to date, in careful consultation with the Taronga Zoo Executive Team. It was briefed that the Hospital building required an outdoor covered space that was a physical structure, with the ability to provide sun and rain protection. Whilst soft landscape elements were considered, Taronga determined that the introduction of landscaped elements [such as trees] in lieu of a physical covered structure does not meet their brief as the trees would not provide the necessary rain protection.

Design considerations and subsequent solutions within zoo environments present extremely unique and specific challenges. Design codes and standard built environment responses whilst being sound for the human realm are often contradictory for the care and containment of animals. Therefore, recommendations to include medium to large trees in the Hospital forecourt is not acceptable as it is in close proximity/adjacent to the Chimpanzee enclosure, would be a high risk for animal welfare and human health and safety, and therefore is determined not an appropriate design outcome for the space. Large trees close to exhibits have a high likelihood to drop branches into exhibits which can be used as a means

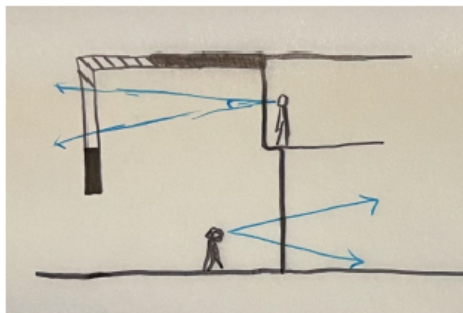
of animal escape. Conversely the location of footholds and climbing structures too close to the Chimpanzee exhibit containment wall presents the opportunity for guests to climb into the animal exhibit.

Multiple design options for the Canopy have already been considered to meet the project brief. The following describes the design process and option investigation undertaken to arrive at the current preferred canopy design outcome.

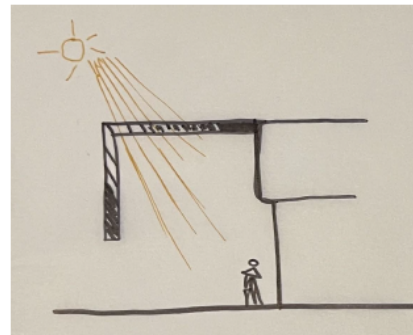
1. “Lifted Veil” Canopy Concept

The “Lifted Veil” canopy concept investigated the design of an overarching two-storey canopy form that enveloped and wrapped the hospital building and forecourt in a rectilinear shaped form. The veil is supported by a series of columns under, but creating the visual appearance of a hovering form. The cladding of the “veil” was intended to allow for dappled filtered light from the south, down to the public forecourt area below, whilst allowing for partial glimpse views of the harbour beyond.

This option was discounted by Taronga as not achieving an aspirational drawcard for visitors into the forecourt area. The form was also too harsh and strong, contradicting the organic forms preferred to relate to and draw focus towards nature. The concept did not provide sufficient shelter from the elements, and obstructed critical views from the upper level of the building.



Framed Visibility



Filtered Light

Image 07: Concept diagrams of lifted veil concept

2. “Canopy” Concept

The “Canopy” concept investigated the creation of a curved form enveloping the public forecourt area and building holistically, to create the sense of a canopy or cave. The form creates a place of refuge and respite, referencing the forms of nature. The form was designed as a series of 8 ribbed structural elements, with terracotta battens cladding the sides and top, allowing for dappled filtered light. The ribbed elements could also be extended toward the site edge as a “gateway” pulling people into the area. This option was further explored and developed in the “Tree Canopy” concept [see below].



Image 08: Concept diagram of Canyon concept

3. “Strata” Concept

The “Strata” concept explored the idea of the visual representation of the natural strata of rock faces on the Taronga site, as an architectural form. Layers of horizontal projections over the public forecourt, creating a terracing effect of roof forms at a variety of heights.

This option was discounted by Taronga as not achieving an aspirational drawcard for visitors into the forecourt area. The forms were too pedestrian and low scale and limited to straight lines and edges, which did not connect well with the natural vegetated surroundings of the site. The varying roof levels did not work with the “shop front” glazing and room functionality to best support the viewer's experience looking into the building.

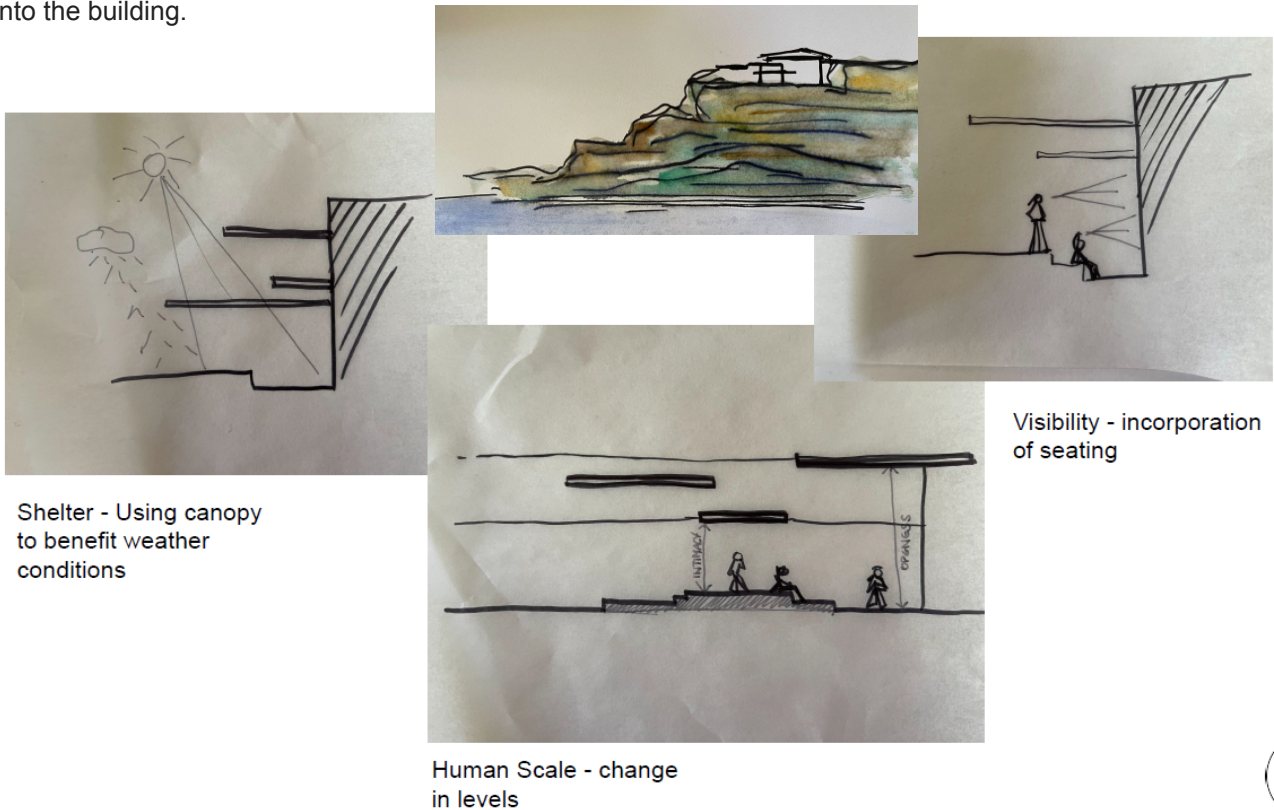


Image 09: Concept diagram of Strata concept

4. “Tree Canopy” - Preferred approach

The “Tree Canopy” concept ultimately became the preferred design approach and was selected by the Taronga Executive for the following reasons:

- Relates to the natural occurring tree canopies that create a sheltered and healing environment for wildlife
- The structural forms provide an organic representation of the concept of “tree canopy”, providing a soft visual connection to the surrounding tree context. The 4 columns, represent tree trunks, come down toward the ground in a soft curvilinear form;
- The canopy form acts as gateway that entices and pulls people towards the forecourt as they transverse down the main zoo circulation path, as a symbolic gesture;
- The canopy form is the representation of a tree trunk curved element that gives curiosity and anticipation to the guest;
- The 4 column tree trunk approach was a less obtrusive and cluttered outcome than the earlier options, providing much better opportunities for public interaction within the space;
- The geometry of the structure, with arched openings to the south, provides a strong connection to the sky and harbour views beyond;
- Opportunities are provided within the plaza under the canopy for integration of landscape elements,

-
- to provide a linkage to the adjacent landscaped areas.
 - A series of solar radiance studies and solar sunshadows analyses were undertaken to inform the solar impacts of the canopy upon the adjacent areas and building, informing the design outcome.
 - The Canopy formed a layered buffer to the adjacent Chimpanzee enclosure



Image 10: Concept diagram of Tree Canopy concept



Image 11: Artist impression render of the final design, incorporating the "Canopy" concept

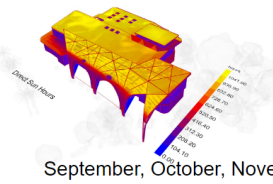
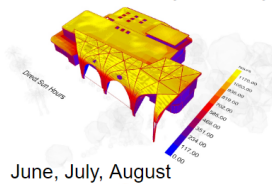


Image 12 & 13: Artist impression renders

Solar Radiance Study

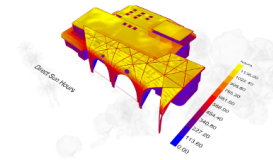
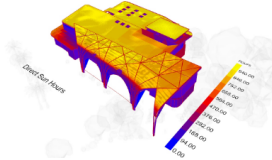
December, January, February

March April May



June, July, August

September, October, November



Shadow Study | 12:00 PM

January 15th, 2020

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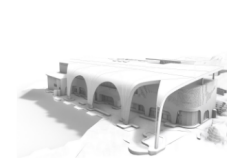
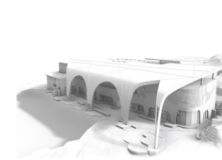


Image 14 & 15: Solar radiance and shadow study diagrams

3. Public Plaza Area

Consider a greater sense of integration between the adjacent remnant bushland and the TWH building, through the following:

- extend the bushland into the site and public plaza
- outline the visitor experience in the public plaza
- consider how the space is being used at different times of day and uses?
- provide detail in relation to seating and how people relate to the space [in relation interpretation and connecting with country]

Response:

The current architectural and landscape design of the Public Plaza Area has considered and incorporated the adjacent remnant bushland area into the plaza area, as a conceptual link between the two distinct areas and functions. The landscape planting strategy is to extend the existing natural Eucalypt / Angophora woodland to the east of the Hospital westward down the rock cutting and across the Hospital plaza to nestle the Hospital within a native bushland setting.

The design incorporates new endemic understorey, shrubs, herbs and grasses in billowing swathes across the plaza and as a unifying landscape beneath the Eucalypt canopy. The material palette for the public plaza pavement seeks to form a connection between the Eucalypt woodland and sandstone outcrop setting, and proposed architectural facade materials. The soft greys and greens of the woodland setting are interpreted across the project.

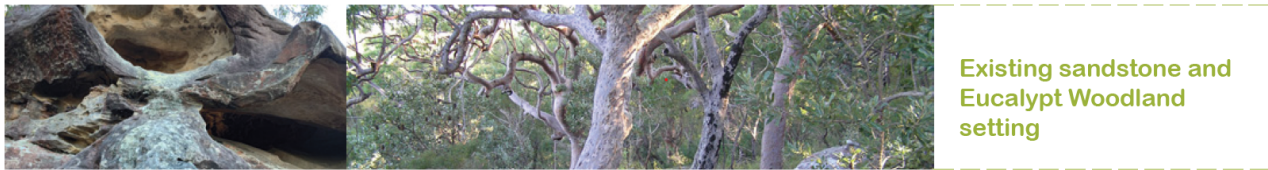


Image 16: Photographs of existing sandstone and Eucalypt woodland on the site [Eximia Design]

The area and size of the public plaza is comparable in size to other large and highly regarded gathering areas on the Taronga site, such as the main entry forecourt and the public gathering area in front of the giraffe exhibit. The below image visually illustrates the comparable size of the plaza to these existing spaces - in the order of 360m².



Image 17: Aerial view of comparable areas

The plaza has been designed to accommodate visitors on a journey of discovery and education. The plaza provides a 'front of house' experience where the public are able to engage with the Zoo's previously hidden veterinary treatment practices. This new 'care and conservation' precinct will be one of the first offerings for visitors as they navigate westward. On arrival at the Wildlife Hospital visitors will be greeted with an open plaza providing clear views to the Hospital's glass 'shop front' where visitors are enticed to witness the inner workings of the Zoo, with its animal health care on show.

The plaza will be accessed by the general public during zoo operational hours [9:30am to 5pm]. The plaza has been designed to function in differing modes that align with a variety of visitor capacities including quiet mid week zoo friends, moderate weekends to mega peak [New Year / Christmas periods] which sees the whole of zoo visitation range from 1000 – 10,000 pax/day respectively. The plaza will be managed accordingly with the capacity to accommodate up to 140 guests at any point in time [with minimum 1.5 metre social distancing] on the busiest of days.

The overall plaza dimensions are on average 6m wide [narrowest] x 50m long, with an overall floor area of approximately 450m². The area has been designed to allow for 3-4 prams / wheelchair users to easily pass each other.

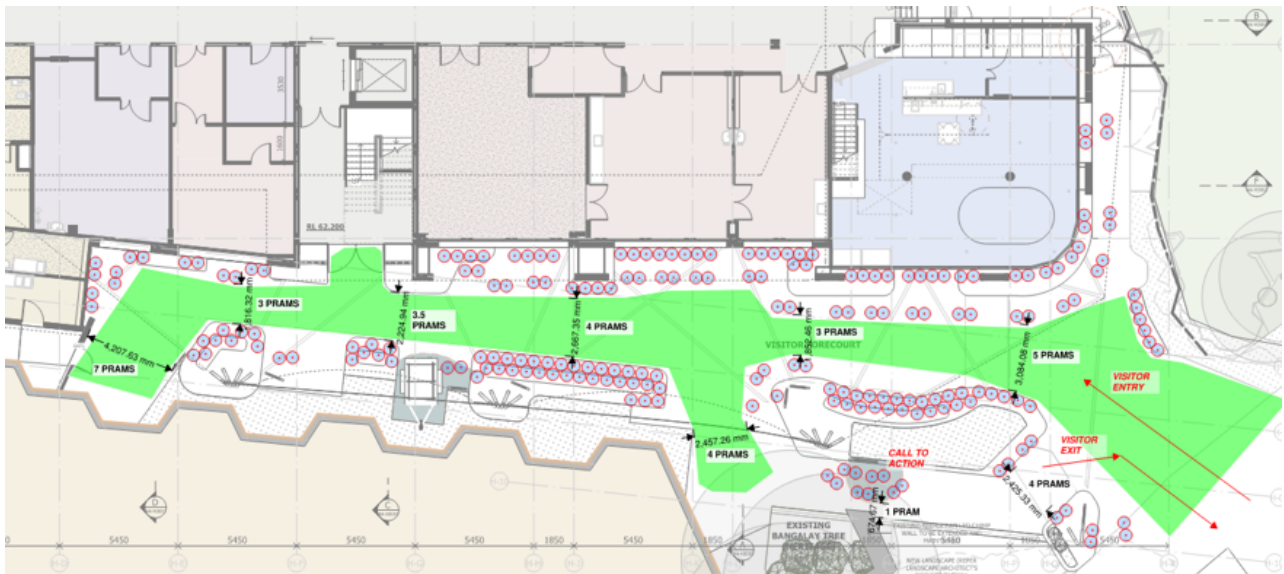


Image 18: Public Forecourt spatial planning diagram

The plaza also has a variety of stops and engaging features aimed to pull people further into the plaza, while providing educational material. Scattered throughout the public plaza are multiple children's interactive areas, engagement zones, interpretation and signage panels. These items are in the process of design development and are led by the Taronga Interpretation team. The installations will be developed in close collaboration with the Interpretation consultant, Eximia Design Landscape Architects, dwp and the Taronga Aboriginal Advisory Group. Upon completion of the project, Taronga volunteers and staff will also be present on site to answer questions and provide talks on events and activities within the hospital.

A variety of visitor seating is provided for comfortable terraced viewing of hospital procedures and presentation screens. The seating has been designed and positioned to allow guests to sit and view into the internal hospital animal treatment rooms, and allow them a time of reflection and education of the conservation and animal care work being undertaken within the building. The seating areas are surrounded by landscape zones, containing a low level planting, referencing back to the bushland vegetation to the east of the site.

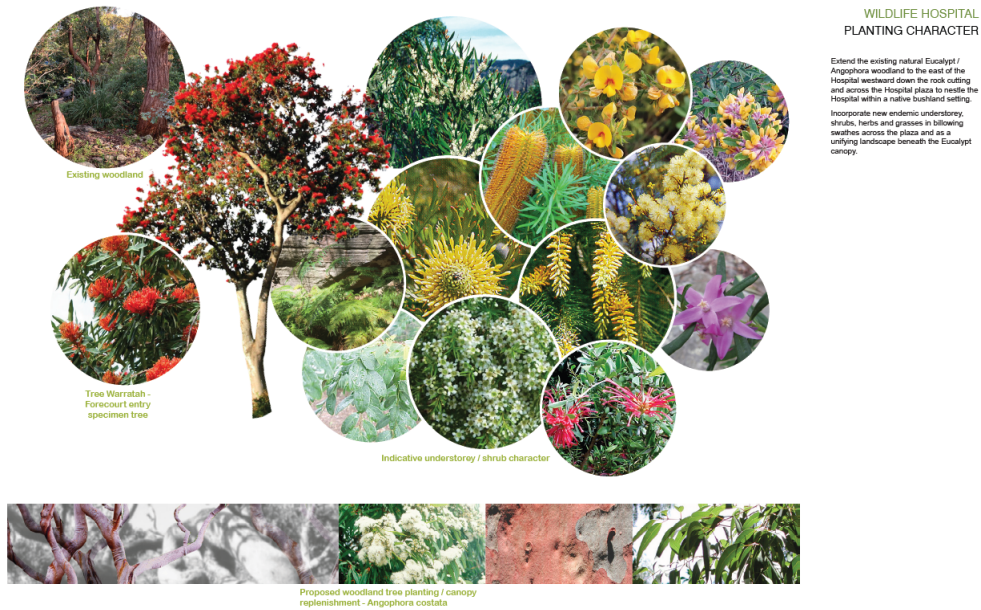




Image 21: Public Plaza Floor Plan [Eximia Design] L-DA-13

4. Landscaped Walkway

- Provide information on the Tree Protection Zones [TPZs] and the existing vegetation;
- Provide information on the levels of the walkway and how this responds to the context;
- Consider the importance of the bushland and the requirement to create a physical connection through this area – consider real bushland regeneration;

Response:

The location and positioning of the landscaped walkway within the remnant bushland zone was carefully investigated and designed in collaboration with the Landscape Architect, Arborist and heritage consultant. Please refer to the Tree Management Plan [L-DA-8] by Eximia Design, contained within the Landscape Architect documentation package.

In considering the location and position of the walkway, tree removal has been carefully considered and justified including:

- the classification of the species [ie weed species] - 4 trees in total;
- structural damage to existing infrastructure - 1 tree in total;
- alignment issue with the walkway - 5 trees in total.

To compensate for the tree removal, 6 new Angophora Costata trees are proposed to be planted in the site area.

The levels of the walkway have been determined in careful assessment of the path location, relative to existing tree placement, and to provide a DDA accessible path of travel. Refer to the East Bushland Landscape Plan [L-DA-11] and Sections [L-DA-12] by Eximia Design, contained within the Landscape Architect documentation package.

The requirement for a DDA compliant landscaped walkway through the remnant bushland zone was a requirement of the Taronga brief. The importance of providing a DDA compliant pathway, provides essential staff and student access between the existing Taronga Institute of Science & Learning [TISL] and the new Taronga Wildlife Hospital building. Without this connection, the general path for staff to

access the facility is through the public areas or via a non-compliant path of travel along the vehicular access road, posing an unacceptable safety risk and equity issue for staff.

Additionally, the new landscaped walkway was in part initiated as a result of consultation with the Taronga Aboriginal Advisory Group [TAAG] and Registered Aboriginal Parties [RAPs] through the SSDA ACHA process.. The pathway presents the opportunity for aboriginal people to share and educate nonindigenous people on the concept of caring for Country and connect with Country. Guided walks through this area, where possible, could be conducted as part of Taronga's education programmes.



Image 22: Tree Management Plan [Eximia Design] L-DA-8

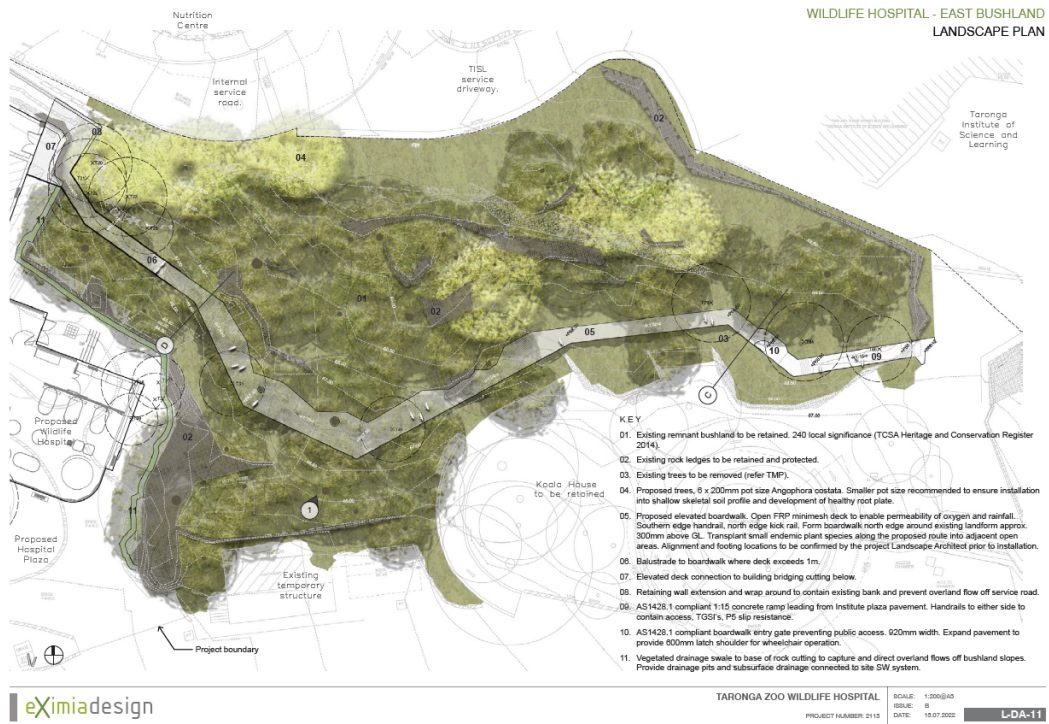


Image 23: Landscape Plan [Eximia Design] L-DA-11

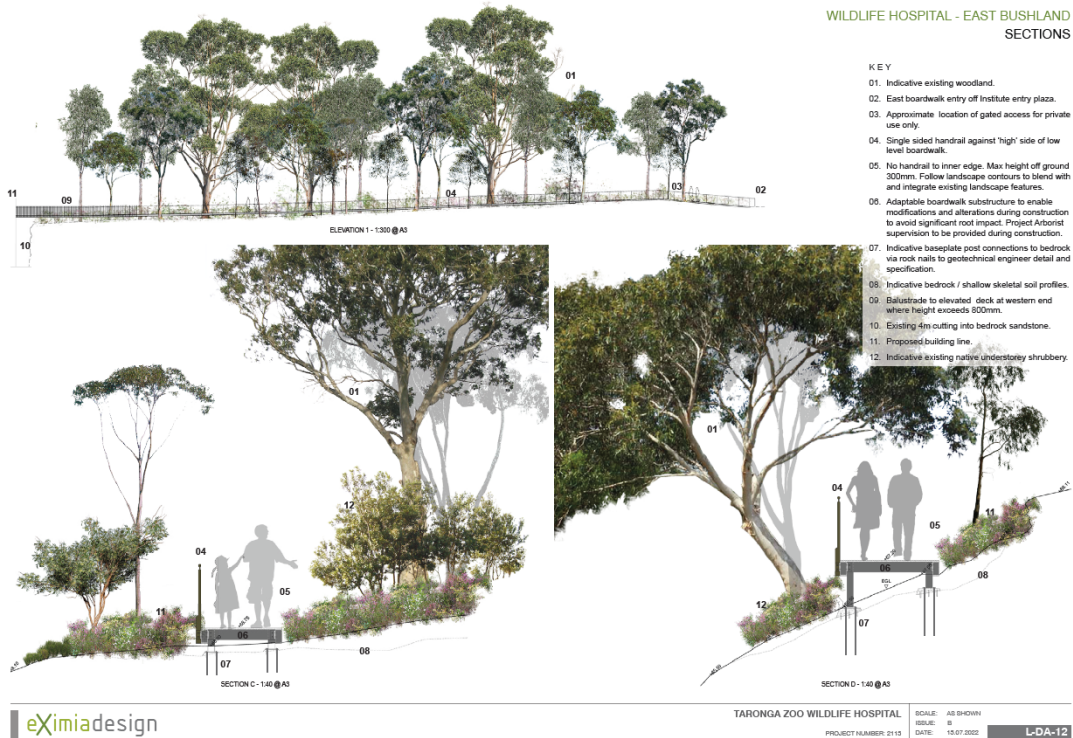


Image 24: East Bushland Sections [Eximia Design] L-DA-12



5. Connection to country

The project offers an opportunity to broaden the commitment and connection to country further. There is an opportunity to work more directly with an indigenous consultants and is encouraged to be considered in the design process.

Response:

In order to build a deeper and more aligned relationship with the Cammeraigal Country where it is located, Taronga developed the Taronga Aboriginal Advisory Group [TAAG] to form part of its governance structure. This body has been instrumental in lifting Indigenous insights and inputs to a new level and playing a key role to the development of indigenous inclusion and education. The TAAG are engaged regularly throughout the duration of projects at Taronga. This group is comprised of indigenous representatives including Cammeraigal representatives. Part of the TAAG's role is to guide and educate Taronga in interpretation of indigenous culture, and to support capital projects in regard to their relationship to indigenous culture. Taronga in association with the TAAG is working to develop a consistent Connecting with Country strategy that represents the whole Taronga site with individual projects reinforcing the greater strategic intent.

The TAAG have been engaged with the TWH project and support the strategy that is being applied in regard to Commitment to and Connecting with Country. The Taronga Wildlife Hospital [TWH], will support the health and wellbeing of native Australian wildlife, and Taronga Zoo's animals, through the provision of veterinary care and treatment services. Through respect for the Indigenous landscape, the healing of animals, and the nurturing of those who use the facility, the project aims to promote and support a Commitment to Country.

The TWH will through its core business and function will care for all animals and wildlife. The Hospital is the place of healing for zoo animals and rescued wildlife at Taronga, the new TWH will enable Taronga to expand its efforts in animal care and wildlife conservation. This care and conservation, represents the deep connection to Country and respect for all beings that is at the core of the indigenous concept of Caring for Country. Caring directly for the animals the provides a spiritual connection to Country.

The TWH will develop interpretive educational installations that will communicate the activities of animal care to guests. The installations and educational programs will also provide advice to guests of how to care for injured and sick wildlife.

Design of public realm elements and multimedia will educate the community of how Indigenous Australians care for country will be undertaken in collaboration with the TAAG and the engagement of a suitably qualified consultant. Learnings of spiritual connection to animals to assist in the healing of wildlife will be incorporated into the design.

Rehabilitation of Section 170 Heritage Bushland will be undertaken to resurrect endemic plants. The integration of the new landscaped walkway within the bushland was initiated as a result of consultation with the Taronga Aboriginal Advisory Group [TAAG] and Registered Aboriginal Parties [RAPs] through the SSDAACHA process. The pathway presents the opportunity for Aboriginal people to share and educate nonindigenous people the concept of caring for Country connect with country. Guided walks through this area where possible could be conducted as part of Taronga's educational programmes.

Throughout the design development stages the project team will work together with Taronga Indigenous staff, Traditional Owners and TAAG to incorporate the Connecting with Country framework.



6. Sustainability

- *Consider higher and more ambitious sustainability targets for this project, as a benchmark project.*
- *Consider carbon neutral and net zero targets*
- *Consider the re-use of existing demolished materials*

Response:

Taronga Zoo has a holistic strategic direction in its approach to Sustainability and Climate change. This project is designed to align with the overall strategic direction for carbon neutrality, Environmentally Sustainable Design and adoption of renewable resources. As with other significant building projects the Taronga Wildlife Hospital is targeting a minimum 5 star Green Star GBCA rating.

Specifically for this project, an ESD consultant is working with the broader design team to ensure the Taronga Sustainability brief and objectives are achieved. Refer to the Environmentally Sustainable Design Strategy report prepared by LCI to accompany the SSDA.

Broadly speaking, the design achieves:

- ESD principles incorporated into the design, construction and ongoing operation of the facility;
- Exceeds industry recognised building sustainability and environmental performance;
- Minimises Greenhouse Gas Emissions and consumption of energy, water and material resources.
- targeting a 5 Star Green Star Certified Rating using the Design and As-built V1.3 rating tool in aligning with 'Australian Excellence' and targeting initiatives that exceed relevant sustainability performance standards
- targeting a 10% Energy/Greenhouse Gas emissions reduction;
- minimising the consumption of energy and water resources;
- capturing of stormwater runoff into the Taronga Zoo Waste Water Treatment Plant, for reuse across the campus;
- the use of durable and low maintenance materials;
- the use of low carbon and low embodied energy materials, such as timber and brick masonry;
- the implementation of high water efficient and energy efficient fixtures and equipment;
- high thermal efficient building fabric and passive design principles;
- solar photovoltaic panels to supply energy to the site;
- implementation of a green travel plan for the site;
- smart energy metering system;

Standard contemporary building design and assessment tools are humancentric in their focus. Whilst components of projects at Taronga Zoo do require human habitation, most projects at Taronga must incorporate design for animals and must prioritise the welfare of the animals that live in the respective facilities. Often current assessment tools such as NCC and GBCA do not allow for the specific biological or containment required in the husbandry of animals and as such the projects have difficulty complying with standard building legislation and guidelines. The TWH is an extreme example of this specificity and a project of this nature, with extreme temperature and humidity controlled environments, along with very specific animal management and bio-hazard and infection control measures, requires a significant amount of mechanically conditioned areas. Not to mention the large fridge and freezers required for the Post Mortem necropsy spaces and the significant amount of medical equipment contained within the facility. These types of environments rule out mixed-mode or naturally ventilated spaces and the building is highly energy dependent. The very nature of the typology of the facility, which is akin to a human hospital type environment, making it very difficult to achieve any greater than a 5 Star Green Star rated facility while still achieving the unique requirements of an animal hospital.



7. Site Permeability

Consider the planning arrangement, views and permeability through the site. There are opportunities to get views through the site.

Response:

The overall planning strategically locates back of house activities that may be sensitive or related to animal welfare to the back of the site, and intentionally blocked from the public. This also applies to the loading bays towards the west of the site where injured or deceased animals are delivered to the Hospital. Therefore there has been a deliberate intention not to allow for permeability through the site.

The only dedicated public space is the forecourt on the ground floor. Views through the site are not possible from the ground floor of the building. This is as the site is constrained by an approx 3 metre masonry wall in the South which is used for the containment of Taronga's Chimpanzee group, and varying rock face from 3 to 7 metres along the North and West elevations. The Chimpanzee containment wall cannot be permeated in any form due to the welfare of the chimpanzee and for the stability of the wall and the risk that this dangerous animal has on the safety of humans. There must also not be any potential foothold to allow wayward humans to enter the chimpanzee exhibit as this would result in certain fatalities.

Where possible, the design and planning does utilise the harbour views from the upper level, via the teaching facilities spread across the south facade of the building. Users will be able to view across the zoo and out to the harbour.

If you would like to discuss the contents of this letter, please do not hesitate to contact the undersigned.

Yours sincerely,

Katherine Daunt

Design Director | Registered Architect - NSW ARBN 9981
dwp | design worldwide partnership

E: katherine.d@dwp.com
M: +61 477 709 588
T: +61 2 8080 7917
Enc: n/a