



Proposed Reptile & Amphibian Conservation Centre Heritage Impact Assessment

FINAL REPORT
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for the Taronga Conservation Society Australia



GEOFFREY BRITTON ENVIRONMENTAL DESIGN & HERITAGE CONSULTANT
ABN 75 869 266 782

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Figure 1 Location plan showing the area of Taronga Zoo potentially affected by the proposed Reptile and Amphibian Conservation Centre and associated development. Refer to **Figure 2** for more detail of the listed heritage items included within this area. (Source: NSW Land & Property Information SIX Viewer)

I Introduction

I.1 Preamble

This report was commissioned by the Taronga Conservation Society Australia (TCSA) to review the potential for heritage impact arising from the proposal to build a new Reptile and Amphibian Conservation Centre at Taronga Zoo, Mosman. The review focuses mainly on European cultural heritage relevant to the precinct. The TCSA has sought separate advice regarding any potential impact on Aboriginal cultural heritage.

The proposed Reptile and Amphibian Conservation Centre represents a project that follows general recommendations espoused in an ongoing overall zoo master plan by specialist zoological planners Green & Dale Associates (GDA), Melbourne and USA, based on the endorsed master plan 'Zoo 2000'. The site planning and design of the proposed precinct that is the subject of this HIA report is described in 2021 documentation by dwp architects (refer to **Section 5** of this HIA report).

I.2 Site Location

Taronga Zoo is located at the southern edge of Mosman overlooking Sydney Harbour and is accessed principally from Bradley's Head Road (as well as by ferry from the harbour). The proposed development precinct is located in the central part of the zoo across the eastern gully that ultimately drains to Athol Bay (**Figure 1**). The proposed site area is near the iconic and visually prominent former Indian Elephant Temple and between the current children's playground (formerly the earliest main Seal pond then Lemurs), floral clock lawn (all on the northern side) and the current Saltwater Crocodile pond and Tamarin area (to the south).

I.3 Background

A distinctive aspect of modern zoos around the world is that they are generally in a state of flux as various exhibits are progressively developed or upgraded to respond to evolving zoological and interpretive planning, practices and philosophies.¹ Indeed Taronga Zoo demonstrated such an approach from its inception where its progressive site planning and design, for the time, contrasted markedly with that of the more traditional 19th century zoo at Moore Park that it superseded. Over one hundred years later, the zoo's exhibits continue to be reassessed and upgraded in line with international zoological conservation practice and interpretive innovations. Consistent with this approach, the present proposal for a new reptile and amphibian conservation centre affects that part of the zoo site where, at various times, parrots, cockatoos, macaws and seals were previously located. With respect to the proposed reptile and amphibian site area only Meerkats remain at present with none of the original Interwar period faunal themes remaining in this location. Until the mid-20th century, most of the proposed site area was described as 'gardens', with only two formal aviaries having been built (in the 1910s) towards the eastern end of the site.

The entire Taronga Zoo site (Lot 22, DP 843294) is listed as an item of local environmental heritage (Item 34) on Schedule 5 of the Mosman Local Environmental Plan 2012 (**Appendix A**) as Taronga Zoological Gardens, Bradleys Head Road. The LEP listing also specifically mentions the following components: Rainforest Aviary, Elephant House, bus shelter and office, floral clock and upper and lower entrance gates, Gardens.

While not currently listed on the NSW State Heritage Register (SHR), various specialist heritage-related studies over the past two decades have consistently assessed Taronga Zoo, as well as some individual components, as being of State cultural significance. The Zoological Parks Board of NSW nominated Taronga Zoo for SHR listing in 2002 but the listing was not finalised

¹ Geoffrey Britton, *African Waterhole and Congo Precincts HIA*, Unpublished report to TCSA, 2017

as site specific exemptions were not developed. Studies that assessed the site as State significant include the:-

- * Section 170 Heritage and Conservation Register, 1998 (DPWS and as subsequently amended to the present);
- * Taronga Zoo Conservation Strategy, 2002 (GML), Endorsed July 2002;
- * Taronga Zoo Archaeological Management Plan, 2004 (GML), Endorsed February 2004;
- * Taronga Zoo Landscape Management Plan, 2006 (Design 5 Architects *et al*); and
- * Taronga Zoo African Precinct, Strategic Heritage Advice, 2006 (GML).

Nevertheless, whether sites are listed on the SHR or not, the Heritage Act, 1977 (NSW), at Section 170, requires all State government instrumentalities to establish and maintain a Heritage and Conservation Register as part of their responsible management of public assets (Clauses 3 and 4). The Act requires that the register is reviewed and, if necessary, amended at least annually (Clause 5) and ensure it is publicly (and freely) available for perusal (Clause 7). Consistent with Section 170A (Clause 3) of the Act, both NSW Treasury and the Heritage Council of NSW have issued guidelines to government instrumentalities to assist in the effective management of public heritage assets.² Also consistent with s170A (Clause 1) is the need for the Heritage Council of NSW to be notified in writing before any items on the register are removed from the register or demolished.

With respect to the NSW Heritage Act, 1977, the TCSA does hold a s170 Heritage and Conservation Register for Taronga Zoo though this appears not to be publicly accessible at present (at least in relation to the TCSA website). The register lists a number of components within and in the vicinity of the proposed Reptile and Amphibian Conservation Centre precinct including built structures (the two early D-shaped aviary remnants), early zoo layout, important view lines, as well as planted vegetation (**Figure 2**). Some of these components have been assessed (both in the past and as part of the present assessment) as having either exceptional or high cultural value. All of these site components are listed and considered in this HIA report.

1.4 Approach

The Mosman LEP, 2012 Dictionary describes a **heritage impact statement** as “a document consisting of:-

- (a) a statement demonstrating the heritage significance of a heritage item, archaeological site or place of Aboriginal heritage significance, and,
- (b) an assessment of the impact that proposed development will have on that significance, and
- (c) proposals for measures to minimise that impact”.

The present report is largely structured accordingly. It also follows the standard procedure for reviewing the heritage context of places and potential for heritage impact based on recommendations by the Heritage Division of the NSW Office of Environment and Heritage. A review of the site – historically and physically - is undertaken in order to understand what it is that gives it its cultural value. After considering the nature of the site's cultural significance, the proposed works are then tested against various benchmark criteria such as how would the works affect the assessed cultural significance and would they comply with relevant expectations arising from the LEP heritage listing and those for the s170 register. Finally, where appropriate, recommendations are given with respect to significant heritage resources in order to ensure that Taronga Zoo's cultural significance is not reduced or otherwise compromised.

Where relevant, the likelihood of European archaeological resources is briefly discussed though Aboriginal cultural heritage is the subject of a separate report by Meggan Walker (Urbis).

² The guidelines are *Heritage Asset Management Guideline, 2004* (TAM04-9) from NSW Treasury and *State Agency Heritage Guide, 2005* from the Heritage Council of NSW.

2 Taronga Zoo Historical Overview

2.1 Preamble

In this section of the report, a brief review of the historical development of the site is outlined to help understand the nature and historical significance of the various remnant 'layers' and their relationship to adjacent zoo structures and landscape areas. This review makes liberal use of material in the historical overview written by Nicolas Jackson in the 2017 Heritage Impact Assessment report for the African Waterhole and Congo precincts. This latter report contained a substantial history of both the overall zoo development as well as more detailed historical accounts of the two specific zoological thematic precincts for that report. For the overall zoo development history, reference is made to the 2017 report for any general context. In the case of the present report, the overall zoo's contextual history is dealt with briefly before focusing on the immediate site area and proposal that is the subject of this heritage impact review.

2.2 Initial Basis of Taronga Zoo Development

Land resumed by the Government at Bradleys Head in 1908 and 1912 became the basis of the new Taronga Zoo – replacing an earlier, inadequate zoo at Moore Park - with additional land added in subsequent years as the site continued to develop and expand. The earliest planning and development was by Albert Sherbourne Le Souef (1877-1951), who had been secretary of the Zoological Society since 1903 and, after touring and observing various zoos and parks in England and Europe, formulated a vision for a new zoo in Sydney. This vision was particularly influenced by the recently opened Tierpark Hagenbeck at Stellingen, near Hamburg, Germany, where, as much as possible, animals were kept in barless enclosures that were designed along more 'naturalistic' lines and where a more informed approach to zoo keeping was practiced.

Le Souef described his vision for the new zoo in early 1910, with visitors arriving by ferry and walking to the nearby zoo entrance then:

'following winding paths through the trees, the striking observation will be made that there is scarcely any sign of cages, for the enclosures are masked by thick bushes and the natural contour of the ground, which gives more the appearance of a park, and not by any means of a menagerie; and in this respect the grounds will be unique in Australia for the bold plan of keeping the carnivora in bounds without recourse to iron bars can be carried out perfectly. Sheep and goats will be seen rejoicing on their natural rocks, and monkeys in their spacious wire compartments enclosing large trees, everything living happily under natural conditions in our ideal climate'.³

A major factor in the layout of both animal precincts and the path network throughout the zoo site, was – and remains – the sloping topography towards the harbour. This provides challenges in the design and planning of the place though also enables the dramatic harbour setting to be exploited to stunning effect.

The earlier character of the zoo site was described as:

'a series of plateaus or grassy slopes, rising one above the other to a height of some 340 feet from water level, in a succession of terraces faced with precipitous rock or weather-worn masses of boulders, well wooded with angophora, eucalyptus, eugenia, banksia, grevillea, and other trees ...'⁴

To illustrate the complex nature of the harbourside topography, a detailed contour plan of 1912 survives (**Figure 3**). An early design response to this landscape is shown at **Figure 4**.

³ 'New Zoo at Athol', *Sydney Morning Herald*, 11/2/1910, p. 7

⁴ Taronga Zoological Park, *Australian Zoologist*, Vol 1

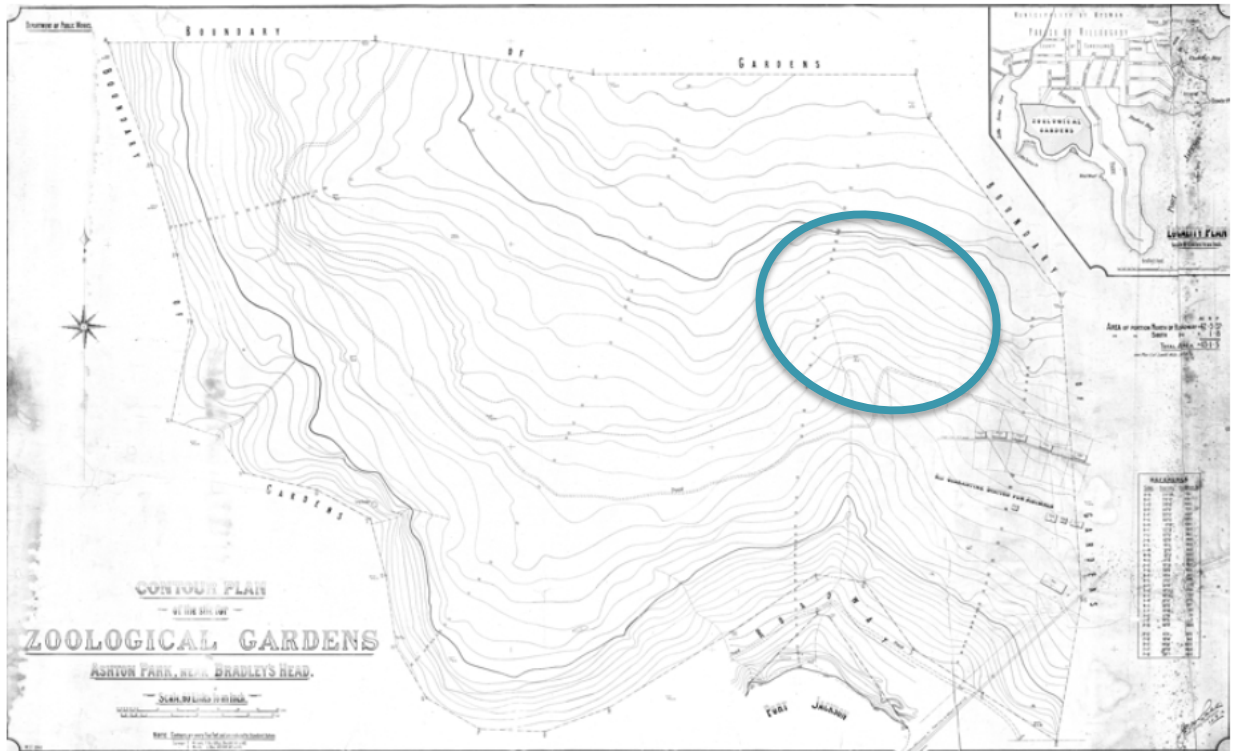


Figure 3 A detailed contour plan of the new zoo site by the Public Works Department (September 1912). The majority of the site remained as bushland, with the exception of the stock quarantine compound at the southeast corner. The approximate location of the present focus for this heritage impact review is shown circled. (Source: NSW Public Works - Plan Room)

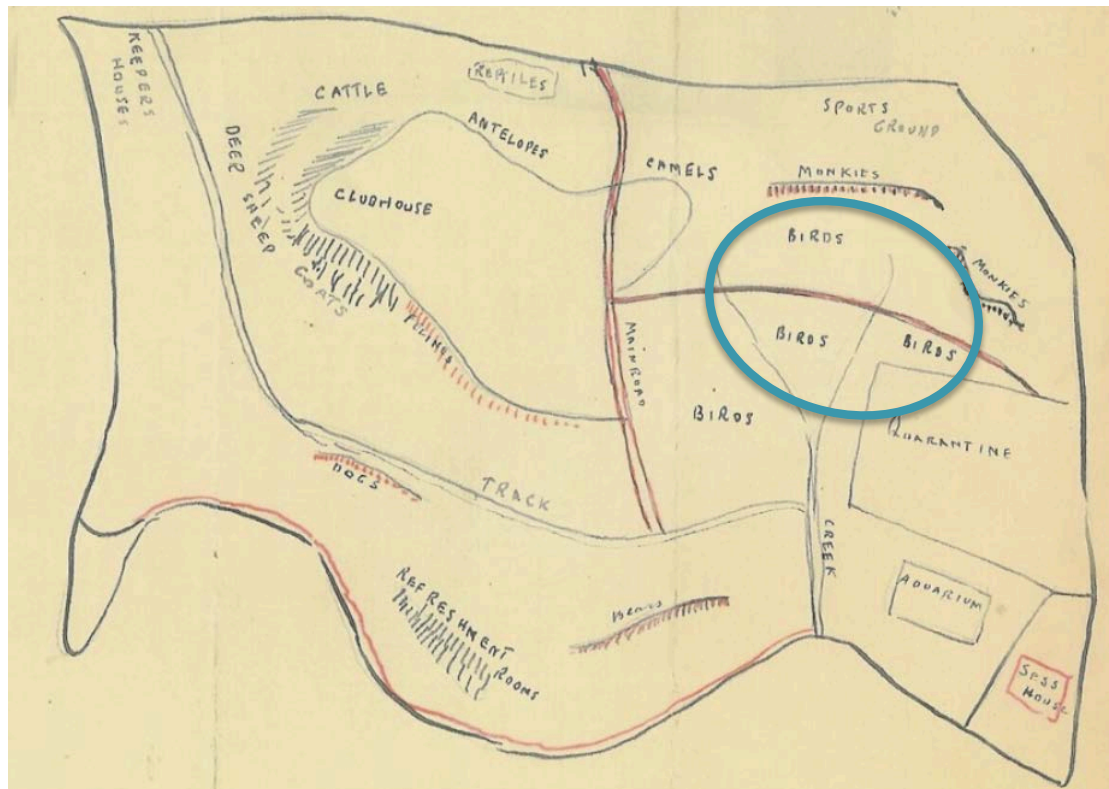


Figure 4 A rudimentary layout sketch – presumably by Le Souef - dated December 1912 shows the proposed division of the zoo site into discrete compartments (animal enclosures with ample reserves for parkland though surprisingly few paths). The eastern drainage system is acknowledged with various bird areas clustered around it. (Source: Taronga Zoo Archives (with Holding SE/81 newspaper clippings))

As Nick Jackson notes in the 2017 HIA report “Le Souef had approached the planning [of the zoo] with some scientific rigor for in 1939 he recalled:

*'The actual planning of the grounds took six months. Several thermometers were hung about the park, temperatures noted and wind velocities recorded. Every section was worked out in detail, and when the general scheme was in mind, numerous different coloured pegs were prepared, and each separate enclosure, lawn, pond, and path, were lined out its respective colour. The trustees carefully checked this over, taking into consideration all available data that could be obtained at that time!'*⁵

Taking into account these microclimatic considerations, an early layout plan of 1913 (Figure 5) records how the sketch of 1912 had been further detailed with discrete areas and intended structures distributed across the site ready for staged implementation.

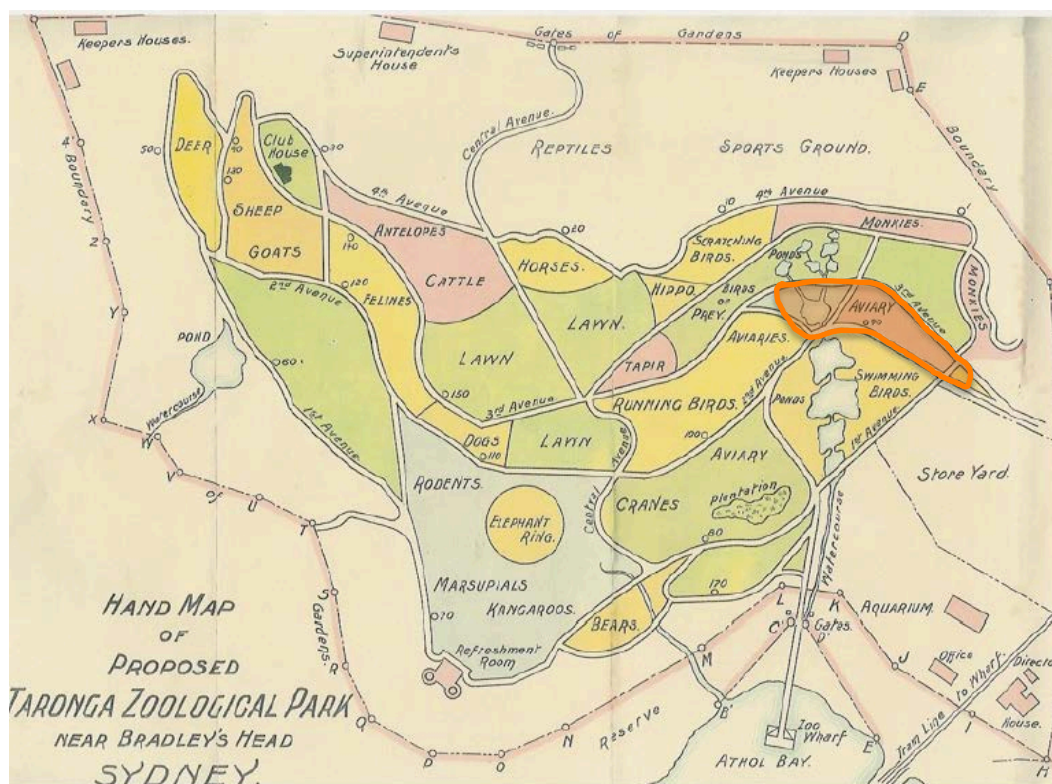


Figure 5 The 1913 'hand map' of the proposed site layout of Taronga Zoo. Note the envisaged 'chain of ponds' along the natural creek line within the eastern gully. The orange highlighted area – between the 2nd and 3rd avenues - indicates the location of the proposed new Reptile and Amphibian Conservation Centre. It can be seen from this that bird aviaries were a very early feature of the present study area. (Source: Taronga Zoo Archives (with Holding SE/81 newspaper clippings))

Nick Jackson continues: “Initial site works included blasting and levelling the bedrock,⁶ and selective culling of native flora. The native eucalyptus trees were removed for they did not provide sufficient shade, while the angophoras were retained.⁷ Technical assistance in regard to the planting was provided by JH Maiden, director of the Botanic Gardens,⁸ and indeed Maiden arranged for the supply of all the plants needed.⁹ Also involved was James Dawes, superintendent of Centennial Park, in providing advice on horticultural matters.”¹⁰ **Figure 6**

⁵ 'Stormy fight for Taronga Park', *Sydney Morning Herald*, 14/10/1939, p. 11

⁶ 'Making Sydney's New Zoo', *Sun*, 11/2/1914, p. 42

⁷ Undated typewritten report included Taronga Zoo Archives Record Holding SE81

⁸ Taronga Zoological Park Trust, Report for 1916, p. 2

⁹ Min, 16/8/1912

¹⁰ M 21/2/13

shows an early track through remnant woodland within the Mosman zoo site. A 1916 *Sydney Morning Herald* article noted the early approach to the indigenous vegetation:

'the park is well covered with native trees, principally angophoras, eucalyptus, eugenias, banksias, etc. Many of these have had to be thinned out to make room for roads and enclosures, but hundreds more had been planted. Apart from herbaceous plants, which are necessary to give colour effect, only Australian material has been used, this will give a special interest to the gardens'.¹¹



Figure 6 A photograph taken to record the natural state of the Zoo site prior to implementation of the works program. (Source: *Taronga Zoological Park Trust, Report for 1916, p. 9*)

An economical material in the building of many of the zoo's structures was concrete and an important aspect of the early - and enduring - landscape character of Taronga Zoo was the use of 'sculpted' reinforced concrete as a means of achieving robust buildings and other structures while imitating natural rock surfaces. The latter consideration was in aid of promoting a more 'naturalistic' landscape setting for the various thematic areas. Le Souef described the intentions of the built environment in relation to the natural one:

'... for all animals be made in the most open system possible without roof or artificial floor, and surrounded by a reinforced concrete wall with a ditch on the inside where required, and that each enclosure be based on a natural ridge of rock, the character of the grounds will allow for this system throughout. This is calculated to alter as little as possible the natural beauties of the park and the absence of artificial surroundings will be best for the animals...'¹²

A plausible source of inspiration for the use of faux-rock concrete at the zoo is an American-trained civil engineer named Charles Rosegger (1877-1919) who was employed at the zoo from about 1914. Rosegger was associated with the Ferro-Concrete Company of Australasia prior to 1909, which used the patented Monier system of reinforcing concrete with steel. This

¹¹ 'The Old and Zoo and the New', *Sydney Morning Herald*, 14/9/1916

¹² Le Souef, 'Re work on Taronga Zoological Park for 1913', 15/11/1913 held Taronga Zoo Archives

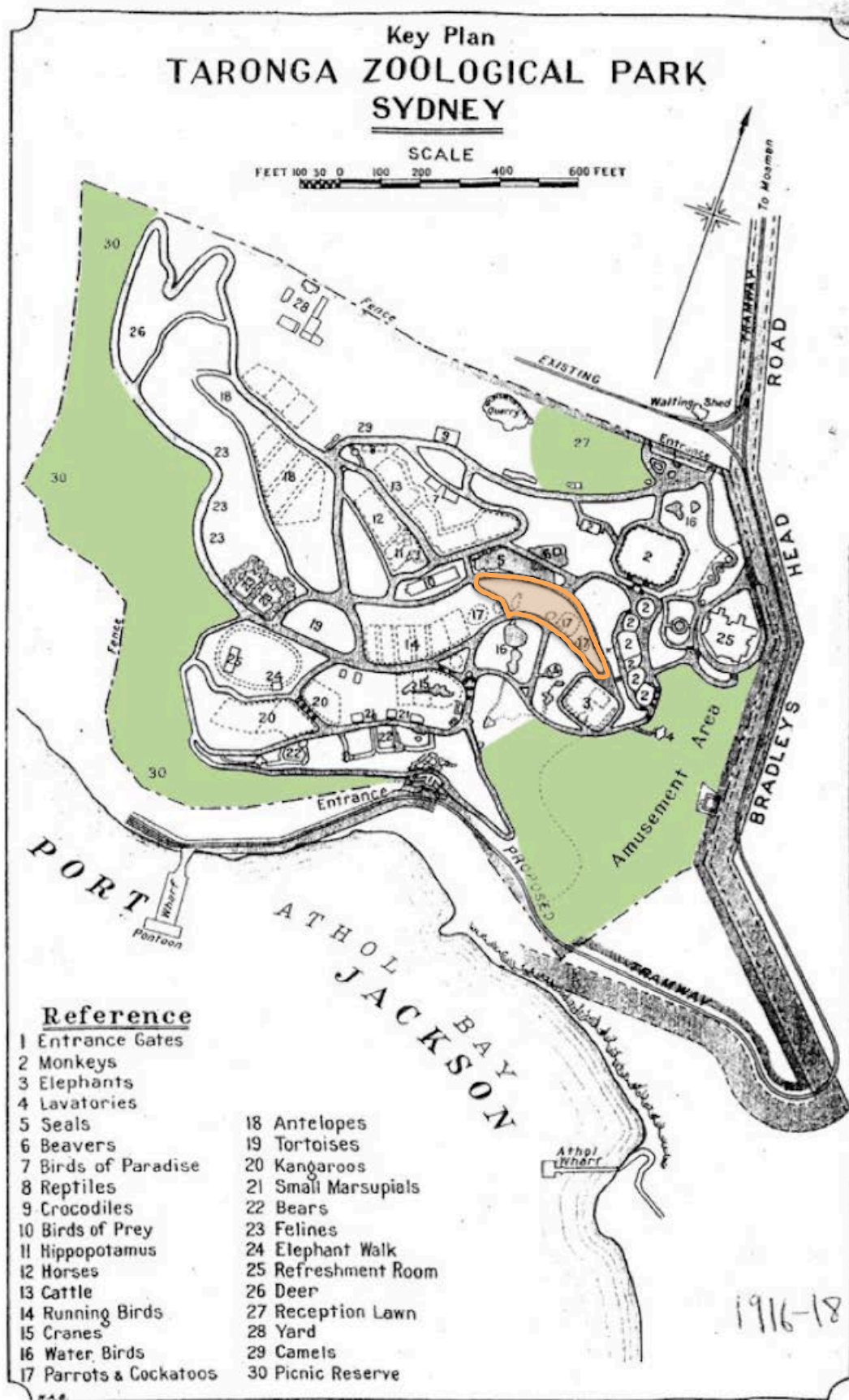


Figure 7 A layout plan of Taronga Zoo from 1916 indicating what had been built by this date. Note the aviaries numbered as '17' showing the two D-shaped aviaries for parrots and cockatoos as well as the elliptical aviary further to the west. (Source: Design 5 Architects et al, Landscape Management Plan, 2006)

construction system was used sporadically in Sydney from the mid-1890s but more widely seen by the 1910s. Other more traditional forms of concrete were also used extensively throughout the early zoo site. Examples of the latter are represented by the remnant aviary base walls at the eastern end of the present study area. Here painted rough-cast concrete is featured with panels of ornamental geometric designs.

A further layout plan of 1916 (**Figure 7**) reveals what had been built to that point. In the present study area is mostly undocumented apart from two aviary features noted as being for cockatoos and parrots. A photograph from about 1920 (**Figure 8**) shows part of the site and indicates that it was probably still uncleared and largely left as remnant woodland.

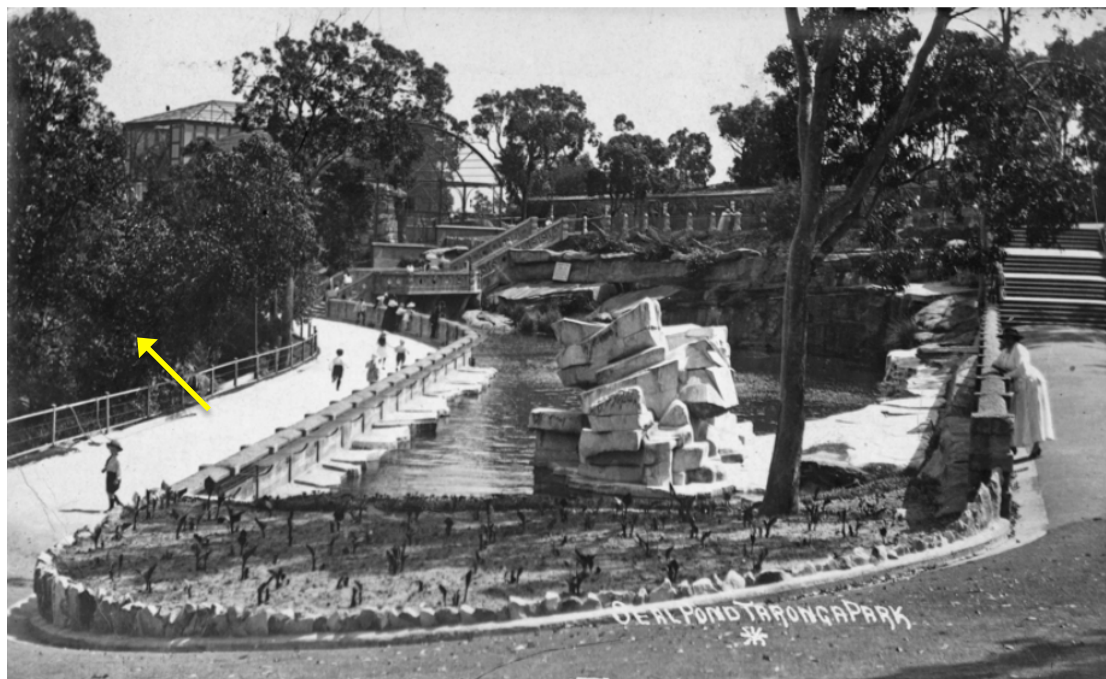


Figure 8 Undated, ca. 1920, photograph of the main Seal Pond. The original Birds of Prey Aviary is shown in the background while the present study site is to the left beyond the access road. In the image the present study site (arrowed) still appears to be remnant woodland vegetation. (Source: *Mosman Local Studies Collection (TarongaZoo.55)*)

Adjoining the study site, early development included the access roads to the north and south (1913-1914), the main seal pond and stair access to the west (**Figure 8** above)(1914-1916 then modified 2012-2013), an elliptical aviary (pre-1916), ponds to the south of the site (c. 1914), the Indian Elephant Temple to the southeast (1915), the floral clock to the northeast (1928) and the remnant *Waterhousea* avenue (Le Souef period). Other landscape works continued into the 1920s with the planting of trees, widening of paths, building additional steps and dwarf walls and other 'rockery work'.¹³

2.3 Specific Study Site Development

2.3.1 Early Aviaries

The two 'D-shaped' aviaries shown within the highlighted area on **Figure 7** (and numbered '17' on the plan) were among the first of Taronga Zoo's aviaries to be built. Archival plans (**Figures 9** and **10**) survive showing that the two aviaries were documented (and possibly designed) by the Government Architect's Branch of the NSW Public Works Department in

¹³ 'Taronga Park' *Sydney Morning Herald*, 18/7/1929, p. 12; Minutes of the Trustees, Taronga Zoological Park, 27/6/1924

about 1915.¹⁴ The superstructures (central metal posts and framing, canopies and enclosing mesh) for both aviaries were removed in 2009 though the base walls – indicating the original 'D-shaped' layout - remain mostly intact. Some restoration work on the remnant walling was undertaken in 2012/2013. Archival images at **Figures 11** and **12** show the aviaries intact.

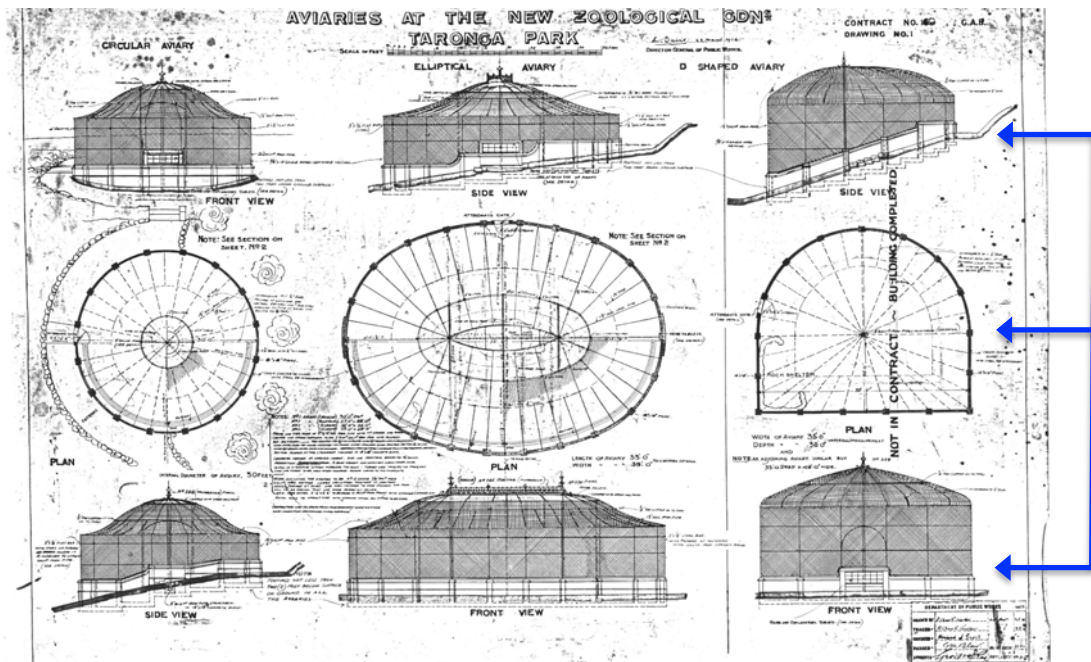
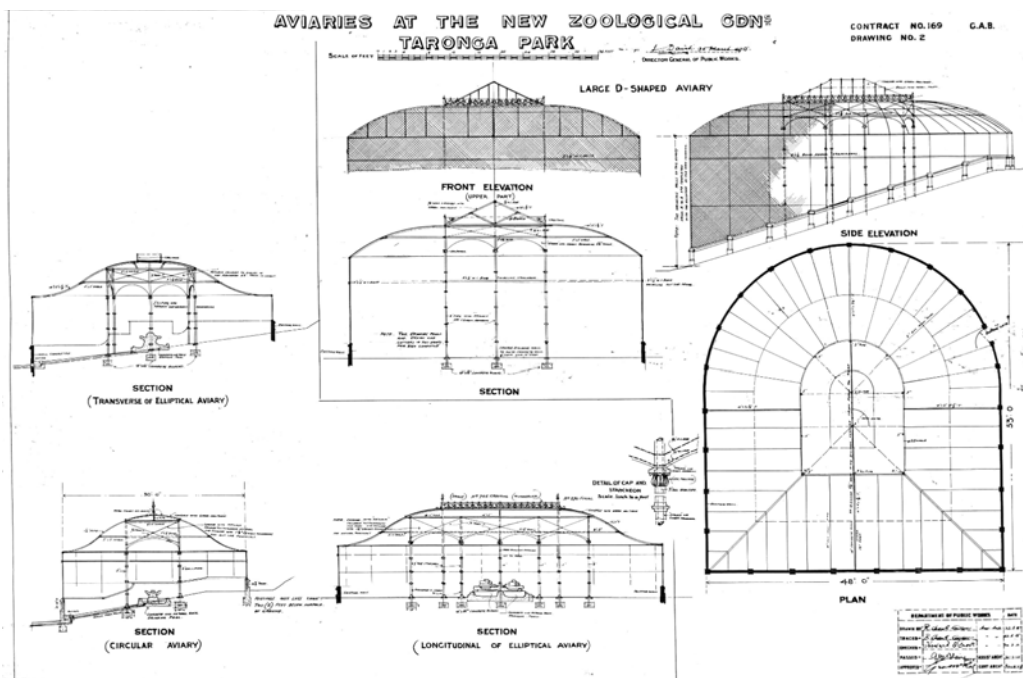


Figure 9 ABOVE Government Architect documentation for some of the early Taronga Zoo aviaries. Of relevance to the present site is the small 'D-shaped' aviary (right) with a note indicating that it had already been built by the 1915 date on the plan. (Source: TCSA Archives) **Figure 10** BELOW Another 1915 plan with details for the large 'D-shaped' aviary to the centre and at right. (Source: TCSA Archives)

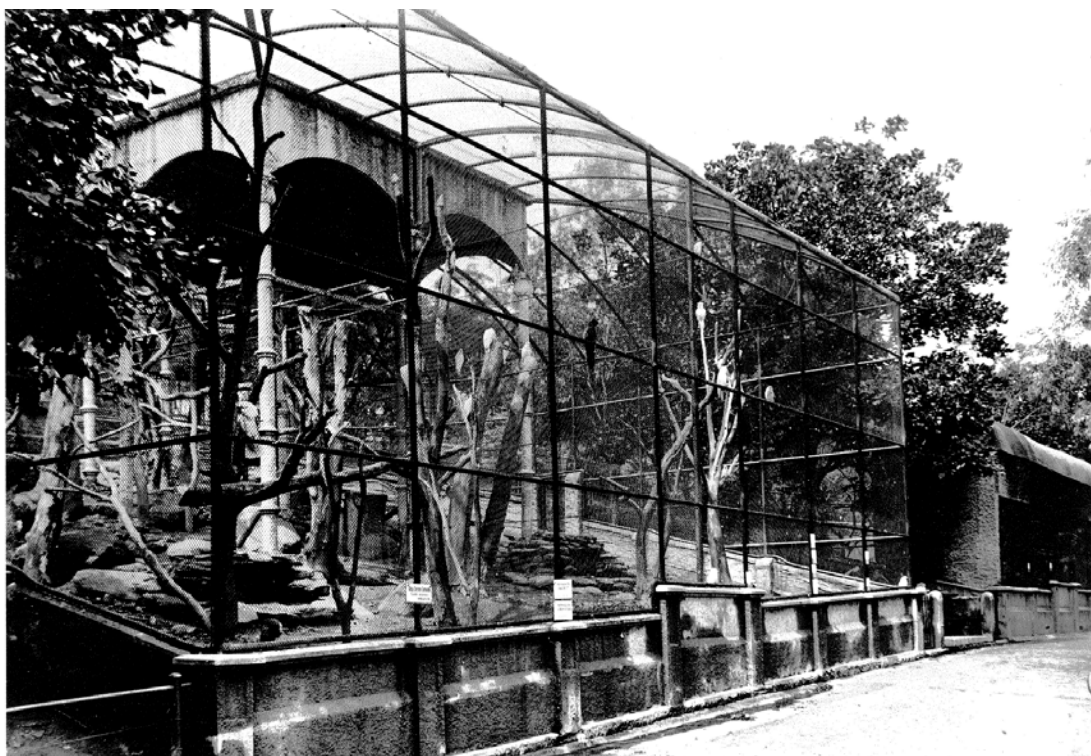


¹⁴ The Government Architect at this time was George McRae and his office was responsible for a considerable number of design projects within the zoo through the 1910s. The D-shaped aviaries were among the earliest such commissions.

During the Hallstrom period (post-WWII), large concrete walls were erected to the front of the aviaries (**Appendix B**) – presumably to ameliorate southerlies into the enclosures. The walls were removed as part of the other work in 2009.



Figure 11 ABOVE The larger of the two 'D-shaped' aviaries with a stone-edged pond in the foreground in an undated (1930s?) view. Note the retained woodland tree (left) next to the aviary and a sandstone outcrop – the aviary wall was actually built over this outcrop and remains a feature (see **Figure 43**). The original path to the right has since been enlarged. (Source: TCSA Archives) **Figure 12** BELOW Another view (also undated but later) of the larger 'D-shaped' aviary with the smaller one further to the right and (by this time) a substantial tree in between. (Source: TCSA Archives)



2.3.2 Original/Early Path Layout

Defining the study site to the north and south are two of the early Taronga Zoo access roads shown proposed in plans at **Figures 5** and **7**. Both appear to reflect the earliest considered thinking about accessing the site as evident in the conceptual sketch of 1912 (**Figure 4**) then being further developed into the two separate roads – higher and lower in elevation – by 1913 (**Figure 5**).

The upper road is shown in **Figure 8** (at left in the image) and the lower road in **Figure 11**. Both roads meet at an acute angle junction to the east just to the north of the former Indian Elephant Temple. Although widened and repaired or reconstructed at various times since being built, the original road alignments have been retained. Stepped access, at the site's western end, linking these two roads also appears to be a very early component of its layout. The 1913 'Hand Map' (**Figure 5**) shows a curvilinear accessway to the west (left) of the eastern drainage line – shown in this case as a chain of descending ponds. By 1916 (**Figure 7**) this access is formalised by a similar curvilinear path (flanked by small ponds) separating the present study site from the former elliptical and bird of prey aviaries further to the west. While the upper section of stepped path remains, the lower section was removed when the adjacent 'Seal Show' area was constructed in the late 1970s. Early painted steel handrail posts and handrails (s170 item 130L) associated with the retained stepped access remain largely intact. The path is closed to the public and restricted to staff access only.

Other steps were added in the mid-20th century between the 'D-shaped' aviaries as evident in a Taronga Zoo plan of 1956. The rustic stone edging (s170 Item 151L) behind the aviaries relates to paths from the 1920s-1940s period. Surveys of the 1970s show paths and steps providing access from between the two aviary sites around the retained curved walls of the aviaries and connecting to the upper roadway via steps. Newer concrete paving, steps and steel handrails remain intact in these areas presently (**Figures 13** and **14**). The present 'cloud-shaped' shade structure and timber decking within the small 'D-shaped' aviary is part of the playful and respectful work to this area by Lahznimmo architects following 2009 documentation of the area by Spackman & Mossop and Lahznimmo.



Figures 13 LEFT and **14** RIGHT show the present access arrangement that was introduced from the mid- 20th century between, and partly around, the remnant 'D-shaped' aviaries.

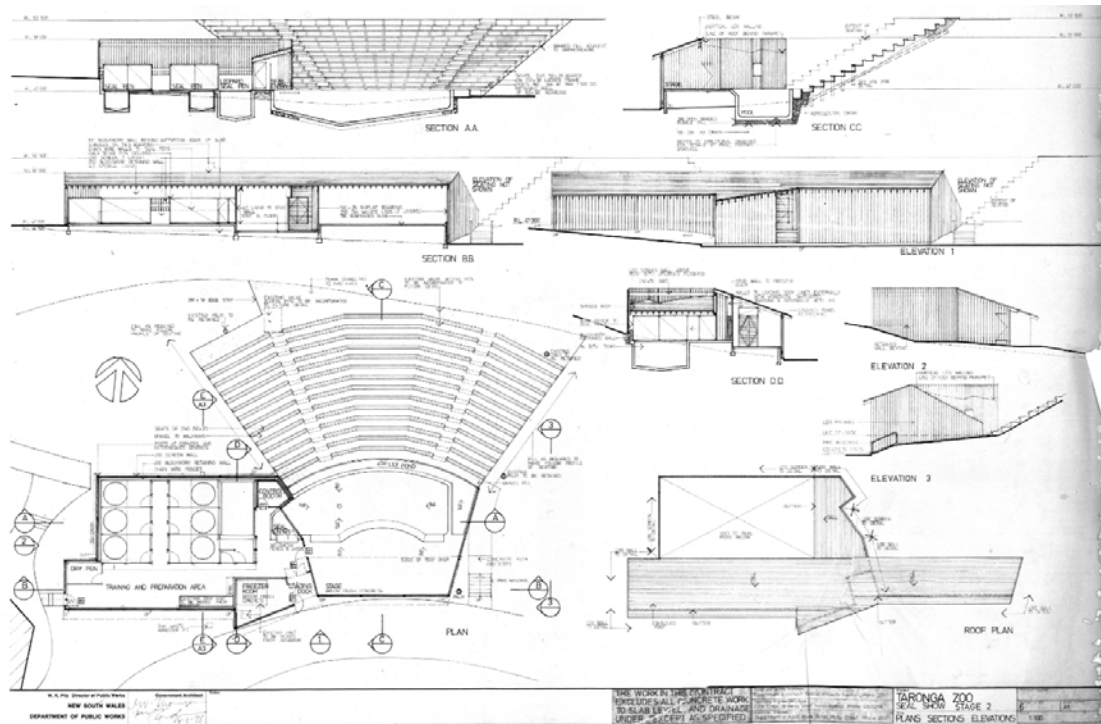


Figure 17 A plan of 1978 from the Government Architect's Branch as part of a set prepared for tender. Comparing this plan with the site survey of 1998, it is evident that various modifications were made either in completing the documentation prior to contract or during construction. (Source: TCSA Archives)

The nature and extent of work following removal of the former Seal Show structures is evident in a site survey of 2010 (and updated 2011)(**Figure 18**). While it shows the penguin pond still intact to the east, the former amphitheatre area remained as a steep slope with intermittent gabion walls. A paved viewing area with seating was provided at the upper road and a large paved area provided on grade with the lower road retained by a gabion wall. Part of the 1939 platypus (then later coypu) enclosure may remain at the southwestern corner of the site.

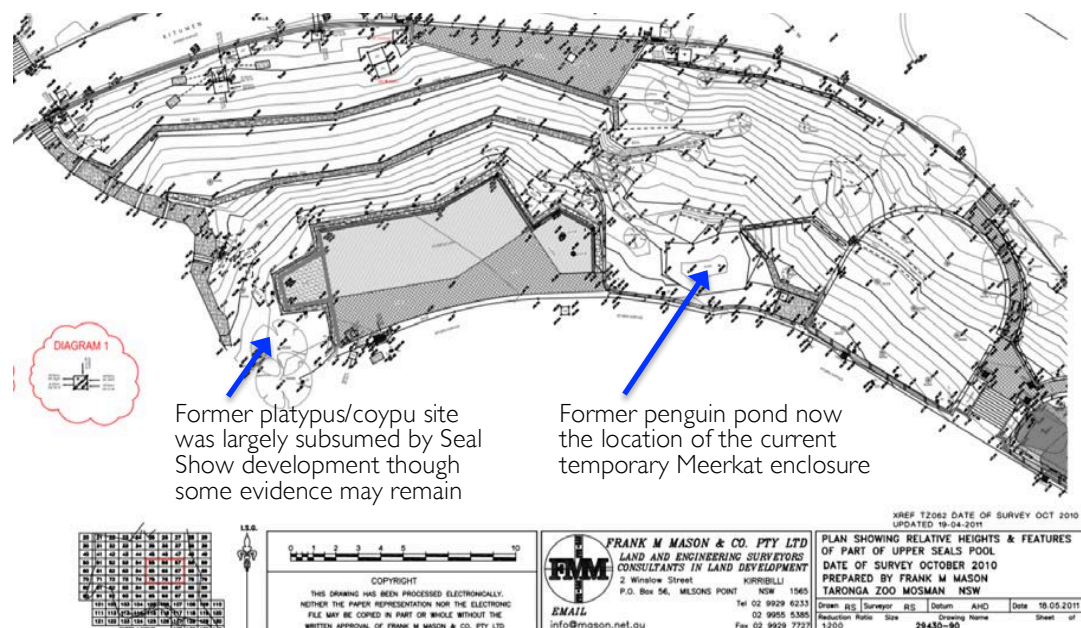


Figure 18 Detail from the 2010 survey showing the aftermath of the removal of the Seal Show structures and the penguin pond before conversion to the present Meerkat enclosure. (Source: TCSA Archives)

2.3.4 Temporary Meerkat Enclosure

Between the former Seal Show structure and the larger 'D-shaped' aviary was a pond formerly used as a Penguin exhibit (**Figure 15**). With the completion of the existing seal complex in the mid-2000s (which included new penguin facilities) the pond was eventually filled in and, until the same exhibit was repurposed as a temporary Meerkat enclosure (**Figure 19**), the entire study site had no dedicated animal areas within it.



Figure 19 View across the front of the study site with the current temporary Meerkat enclosure noted with an arrow - the same structure being previously used as a pond and enclosure for penguins. The picnic lawn to the left was previously the site of the late 1970s Seal Show building with its former amphitheatre where there is currently dense vegetation.



Figure 20 An oblique aerial view from 1933 across the main seal pond showing the study site to the left with mostly remnant woodland and introduced palm plantings along the upper road. The arched canopy structure over the road was built by the early 1930s but removed by 1970. (Source: TCSA Archives)

2.3.5 Plantings

For many years the Taronga Zoo guide maps show a blank area to the west of the 'D-shaped' aviaries and early archival photography, such as those at **Figures 8** and **20**, show the vestiges of the former woodland vegetation in this location. With the progressive development of the area, especially from the mid-20th century, these woodland vestiges became individual trees such as those evident in **Figures 11** and **12**. By the Interwar period a mixture of palms had been

planted along the upper road and some clearing had occurred along the edges of the lower road to enable the construction of small ponds as depicted on the zoo map of 1916 (Figure 7) as well as the archival photograph at Figure 11. A substantial avenue of Weeping Lillipilli or Satinash (*Waterhousea floribunda*) was planted along the eastern half of the upper road during the Interwar period – likely associated with Le Souef’s incumbency. Progressive aerial photographs through the 1930s to 1970s show the avenue (Figure 21). Five trees survive along the northeastern edge of the present site forming a shady walk between it and the adjacent large walk-through aviary (Blue Mountains Bushwalk)(Figure 22).

So while the eastern half of the site has retained at least some of its early plantings, elsewhere little of the original indigenous woodland vegetation remains. The late 1970s construction of the Seal Show removed much of the earlier vegetation in that location including palms planted in the Interwar period along the upper road. Some of these may have been transplanted further to the east within the area currently characterised by a diverse group of palms. This group includes mature examples of Piccabeen palm (*Archontophoenix cunninghamiana*), Cabbage palm (*Livistona australis*) and Kentia palm (*Howea forsteriana*). A mature palm shown to the immediate left of the large ‘D-shaped’ aviary in Figure 21 may be the same as the *Livistona* palm shown at left on the cover photograph of this report.

Later plantings included species uncommon in cultivation in Sydney - a Puriri (*Vitex lucens*)(now gone) and two African strangling figs (*Ficus craterostoma*). Other plantings included various groundcovers, ferns, cycads and palms in association with the conversion of the smaller ‘D-shaped’ aviary as a shelter and rest location and revegetation of the former Seal Show site with fast-growing native species such as Wattle. During the 1990s, a collection of Camellias (Item 258L) – including some uncommon cultivars - was relocated underneath the *Waterhousea* avenue. The Camellias remain.

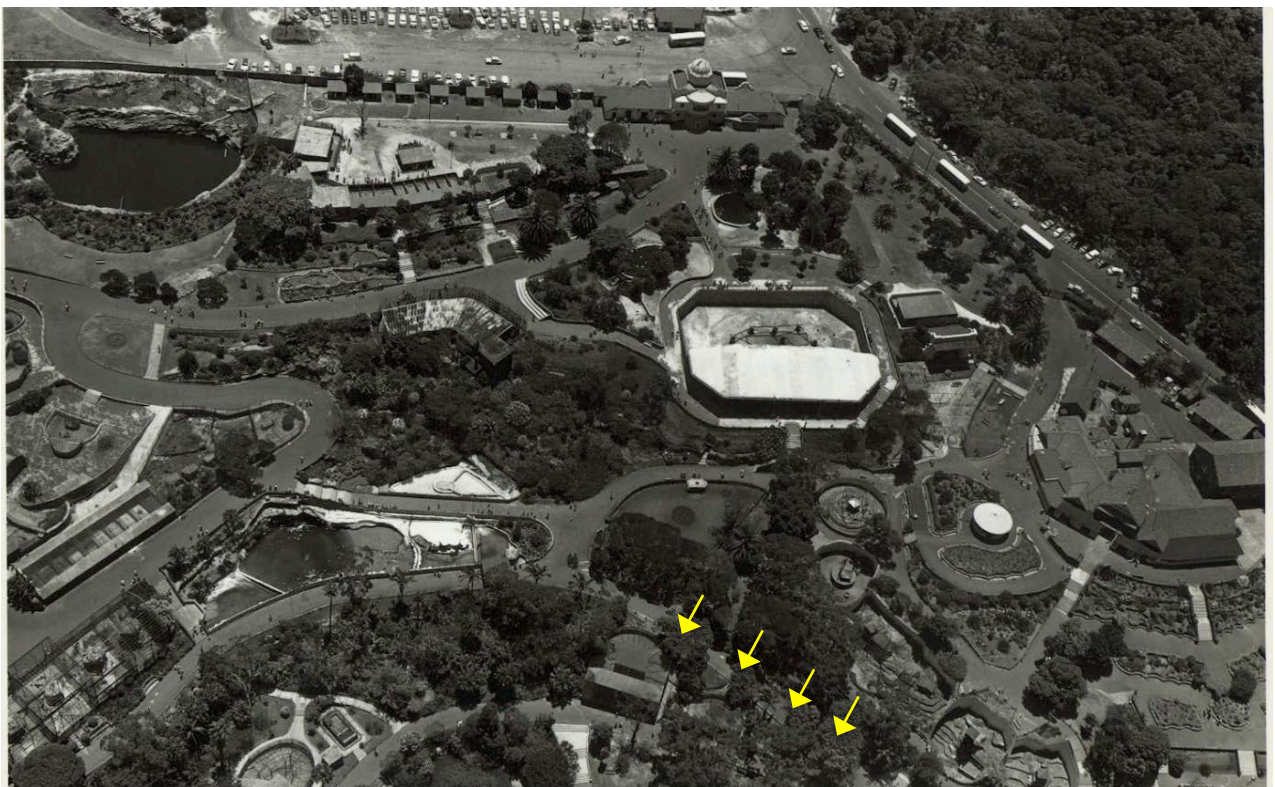


Figure 21 An oblique aerial photograph from about 1962 by the studio of Douglass Baglin showing the study site along the lower part of the image. The maturing canopies of the *Waterhousea floribunda* comprising the early avenue are indicated by the yellow arrows. (Source: TCSA Archives)



Figure 22 A 2021 view along the upper road from near the junction with the lower road showing the shady walk provided by the mature *Waterhousea* (arrow) avenue. The canopies of the recent shelter structure within the smaller 'D-shaped' aviary are visible to the left while the large Blue Mountains Bushwalk walk-through aviary (2000s) is further to the right (not seen in the image).

3 Current Site Context

This section briefly describes the current status of the study site before focusing more particularly on those site attributes – both natural and cultural – that inform its environmental value or significance.

3.1 Pre-Zoo Landscape

3.1.1 Site Morphology

Of the many components of the Taronga Zoo site assessed as having cultural value, the most fundamental relate to its basic landscape morphology (dictating drainage patterns). Between the defining upper and lower roads, the underlying landform of the site is characterised by a dramatic drop from the north towards the harbour to the south. The southerly orientation of the descending topography has facilitated the zoo's spectacular views across the harbour to the city and beyond. This important cultural (visual) asset has been widely recognised since the zoo's inception over 100 years ago.

The study site straddles the zoo's main eastern gully that forms part of the main drainage line (**Figure 23**). The early zoo planning recognised and celebrated this intermittent creek in the formation of a chain of ponds along its course – some of which remain (s170 Item 118B) – as well as purpose-built structures such as the iconic rustic bridge (s170 Item 30B) further to the south. With the removal of the 1970s Seal Show buildings, it is possible again to appreciate the flow of this old drainage line.

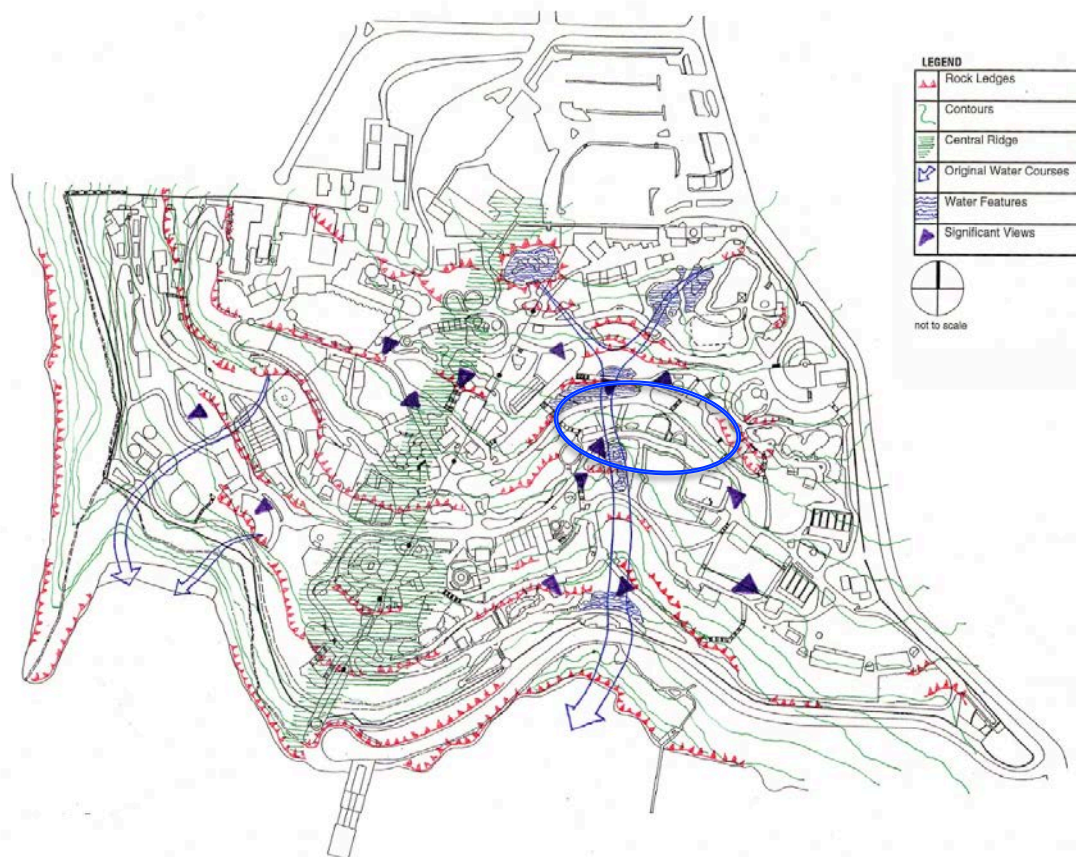


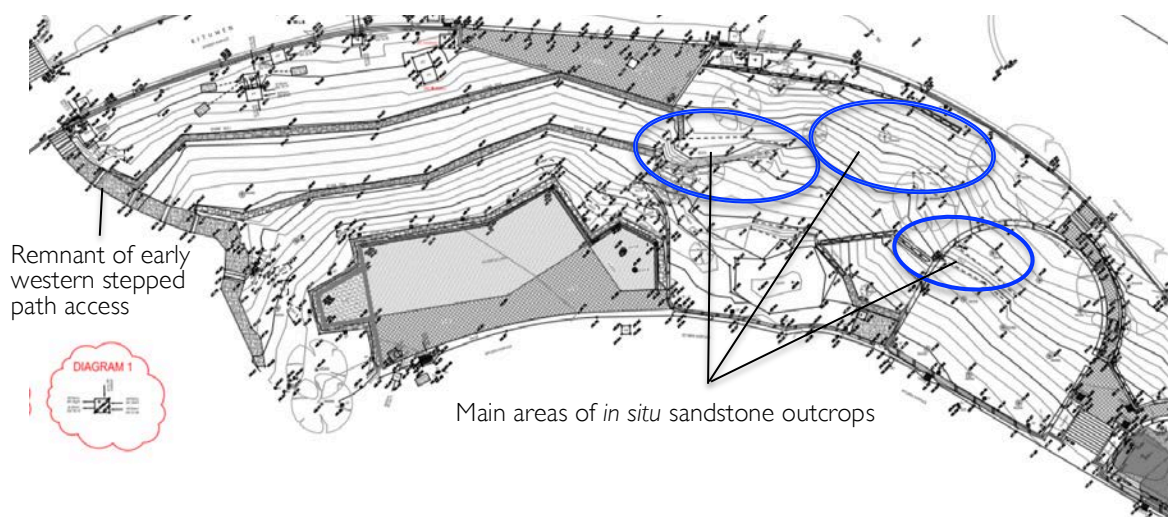
Figure 23 Overall Taronga Zoo site plan showing the zoo's basic landform. The hatched green area denotes the central ridgeline that defines the principal valleys either side while the red graphic indicates the larger rock ledges. The present study site is circled. (Base courtesy: GML Conservation Strategy, 2002)

3.1.2 Sandstone Outcropping

An outstanding intrinsic feature of the Taronga Zoo landscape is the layered embedded sandstone benching and intermittent outcropping. The characteristic Hawkesbury sandstone has been used as a feature in many zoo exhibits since 1913 (Figure 24 within the present study site) – providing both *in situ* quarried stone faces of varying scale and worked stone blocks - and continues to offer opportunities as part of new exhibit designs as well as having a role as an overall unifying element throughout the zoo. Within the present study site there are few major areas of rock outcropping though several outcrops appear to remain intact within the upper central area above the present Meerkat enclosure (Figure 25). Elsewhere throughout the site smaller sandstone boulders are visible – these may be a combination of *in situ* local stone and some relocated stone arranged on site.



Figure 24 ABOVE Undated photograph of the study site showing one of the large natural outcrops in the background. (Source: TCSA Archives/GPO 1-16732 ref. code 185683) **Figure 25** BELOW Detail from the 2010 site survey with the largest areas of intact sandstone outcropping circled. (Source: TCSA Archives)



3.1.3 Local Indigenous Vegetation Community Remnants

Relevant to the overall Taronga Zoo lands, three distinct remnant vegetation communities have been identified with a fourth transitional type having occurred between the communities.¹⁵

These include an *Angophora costata* shrubby woodland type (s170 Heritage Item 189L); a *Eucalyptus botryoides/Glochidion/Elaeocarpus* open forest type along with an intergrade between the two types; and also a *Glochidion/Acmena* closed forest type that has now effectively been lost from the zoo surviving only as a fringe along Whiting Beach (**Appendix C**).

No substantial occurrence of remnant locally indigenous vegetation survives within the proposed Reptile and Amphibian Conservation Centre site however a more detailed, up to date review of the local vegetation status across the eastern part of the zoo is warranted.

3.2 Early Zoo Elements (Interwar Period)

3.2.1 Road/Pathway Layout

A comparison between the 1913 'Hand Map of [the] Proposed Taronga Zoological Park' and the 1920 'Plan of Taronga Zoological Park' shows that a considerable amount of the intended layout of the site was actually built during the 1910s. A further comparison with current aerial photography indicates that a substantial amount of the original zoo layout survives. The upper and lower access roads defining the study site are important representatives of this early zoo layout (early to mid-1910s) with their distinctive alignments responding to the peculiar site conditions within the eastern gully. They realised the intentions of the 1913 site plan where the 2nd and 3rd 'avenues' were shown (**Figure 5**).

The basic network of roads and paths from the original and early zoo plans serves to maintain a continuity and legibility across the visually complex site. It is likely that this layout would also hold some social value (through 'mind-mapping' of reference points or 'place memory') as much as historical value. Often the sequence of paths and publicly accessible access roads forms part of a serial visual experience featuring animal exhibits as well as broader intermittent views and panoramas out across the zoo to the harbour and city skyline beyond.

A section of an early stepped path forms the western boundary to the site and is actually part of the system of early paths and roads within the zoo (s170 Item 99L). The path once linked the upper road to the lower road and separated the present site, featuring parrots and cockatoos, from the earlier enclosures for large 'running' birds (cassowaries, emus, ostriches and rheas) further to the west (now the Gorilla enclosure). A curved linking path in this location is shown in the 1913 site plan indicating that such a path was considered from the beginning of the zoo's planning. The path also linked to the mid-1910s elliptical aviary immediately to the west by 1920 then by 1939 the path enveloped the first enclosure for Platypus. The lower half of the path was realigned for the construction of the 1970s Seal Show buildings then finally removed after these buildings were demolished while the elliptical aviary space was subsumed into the Gorilla enclosure in 1997.

As a component of the original zoo layout along with the upper and lower roads, the remnant western path section would be regarded as a significant element in interpreting the zoo's history whereas the later paths around the 'D-shaped' aviaries, while convenient for access, would be regarded as having lower cultural value. The site survey detail at **Figure 25** shows the current extent of the curving western pathway.

¹⁵ Summary provided by botanist Dr BJ Wallace for the Design 5 Architects Landscape Management Plan of 2006.

3.2.2 'D-shaped' Aviaries

Birds were a major component of the original zoo planning where a considerable number of aviaries were built in successive programs from the 1910s (eg. the former birds of prey aviary, now demolished though with most of the base walls remaining beyond the present extensive ramp system) through to the 1930s. More recently (from the 1970s), various large walk-through aviaries have continued this important zoological theme and its conservation interpretation. The remnants of two 1910s aviaries remain within the study site testifying to the long continuity of this theme from Taronga Zoo's genesis to the present as well as the evolution in aviary design and philosophy. These observations are particularly poignant given the close proximity of the two remnant 'D-shaped' aviaries within the proposed Reptile and Amphibian Conservation Centre site and the adjacent large (and relatively recent) 'Blue Mountains Bushwalk' aviary to the northeast.

The distinctive 'D-shaped' aviaries within the present study site were uniquely designed to respond to the sloping terrain while improving visibility within the exhibits. Although the aviary superstructures have been removed (2009), the base walls remain to indicate their location, spatial scale, site-specific design, materials and finishes and relationship to other early zoo elements. The aviary remnants are considered valuable cultural assets especially for their site-specific design and early construction at the beginning of Taronga Zoo as well as their ability to demonstrate the importance of birds as a zoological theme within the zoo and the progressive development of aviary planning and design within Australia.

3.2.3 Early Plantings

Associated with the 'D-shaped' aviaries, and reinforcing the eastern part of the upper access road, is the Weeping Lillipilli (*Waterhousea floribunda*) avenue. The regular rhythm of the canopies of these trees is evident in 1930 aerial photography suggesting they were planted at least by the early 1920s. Other early archival photographs also show various palm species planted along the upper access road and, with the construction of the Seal Show, some of these appear to have been relocated to the central part of the study site above the existing Meerkat area. All of these early surviving plantings are regarded as having high conservation value.

3.3 Later Site Development (Post-WW II to Present)

The present study site appears to have been the location of two major phases of development within Taronga Zoo – the first during the zoo's formative planning and construction through the 1910s and the second many decades later at the end of the 1970s. Various minor phases of repurposing and adaptation are evident from the historical record mainly from the mid-20th century. The following sections evaluate these later phases of development.

3.3.1 Penguin Pond/Meerkat Enclosure

The earliest zoo plans show a small pond to the west of the largest 'D-shaped' aviary. This may have been the basis of a Penguin enclosure developed in the late 1970s in association with the adjacent Seal Show structures. The Penguin enclosure remained as such until very recently when the structure was repurposed for the present (temporary) Meerkat enclosure. None of the later 20th century or 21st century structures would currently be regarded as having cultural value beyond 'low'.

3.3.2 Former Leopard Seal Pond

By the 1968 zoo guide plan, a pond is shown directly north of the existing Tamarin (then Gibbon) enclosure. It appears to have been purposely built for a Leopard Seal and, significantly, completed a chain of ponds along the original eastern drainage line that was envisaged from the earliest phase of zoo planning. Little details of this pond survive and it was likely removed as part of the late 1970s Seal Show development (with the Leopard Seal being relocated to the

large pond further to the north). The former location of the earlier Leopard Seal pond is approximately where the stage area was in the Seal Show and where the current paved and grassed area is off the lower access road. If there are any subsurface remains of the pond they would be regarded as having only 'low' cultural significance.

3.3.3 Former Platypus/Coypu Enclosure

Further to the west a small enclosure was developed by 1939 for Platypus. The early stepped path at the western boundary of the present study site descended to the north and east of this enclosure (Figure 26). From between 1943 and 1950 the same space was repurposed and used for Coypu (semi-aquatic South American rodents) until the whole structure was removed in the late 1970s for the Seal Show. Some archaeological elements may remain. Also by the 1940s the rustic stone path edging (s170 Item 151L)(Table 4.1) was built behind the aviaries.

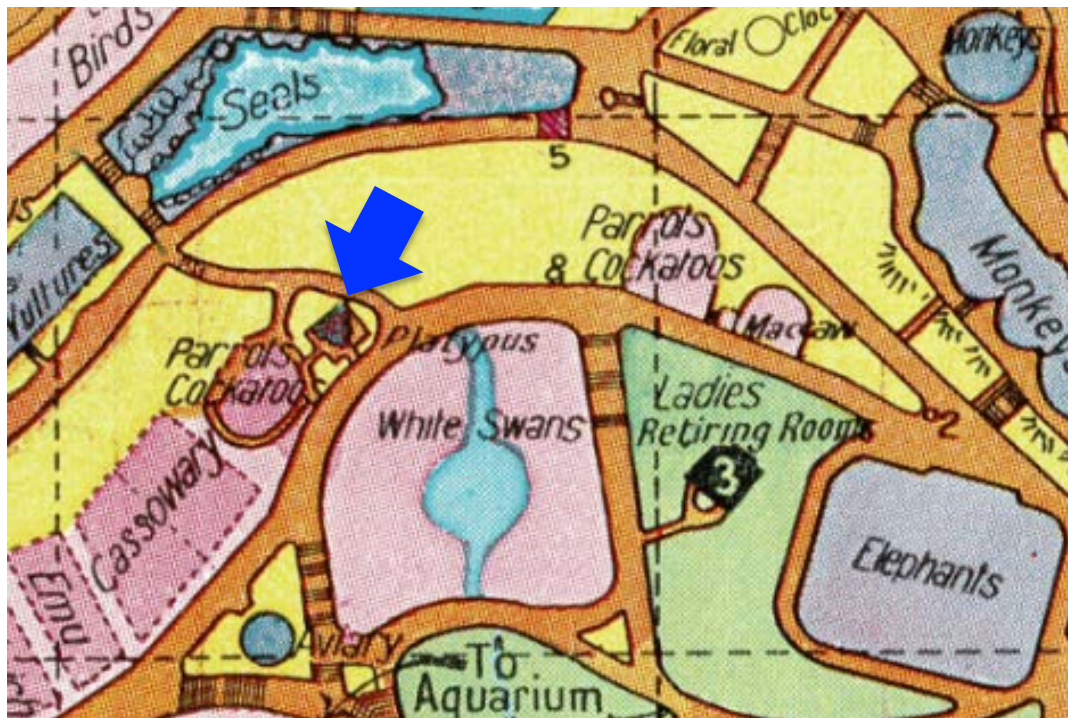


Figure 26 A detail from the 1939 Taronga Zoo guide map showing the (then) new Platypus enclosure (arrow) with the early western pathway linking the upper and lower access roads. (Source: TCSA Archives)

3.3.4 Seal Show Buildings

By far, the largest development to occur within this part of the zoo was the May 1979 Seal Show complex. The two main structures comprising this exhibit dominated the central part of the eastern creek line at this point. It was superseded within three decades with the completion of the major seal/penguin complex further to the southwest. With the complete demolition and removal of the Seal Show structures, the flatter areas were reorganised as rest/picnic spaces and the main sloping area was revegetated with fast-growing native plant species. No remnants of this former exhibit would be regarded as having anything beyond 'low' cultural significance.

3.3.5 Recent Picnic Shelter

About 100 years after the 'D-shaped' aviaries were built, the smaller aviary was upgraded as a rest/picnic space with the most recent form of development within the study site: the present 'cloud-shaped' shelter canopies with timber batten table and bench seating (Figure 27). Paving and planting upgrades were also associated with this work though none of this would rate beyond 'low' cultural value.

3.3.6 Recent Plantings

Most of the site vegetation has appeared since 2009 following a master plan proposal for the study site by Spackman & Mossop. This has included the revegetation of the former Seal Show area along with further plantings throughout the aviary precinct. An exception is the relocation of a large collection of *Camellia* cultivars (s170 Item 258L) in the 1990s. All of these were planted under the shade of the *Waterhousea* avenue. Further recent (later 2010s?) introductions of note are the unusual fig trees (*Ficus craterostoma*) west of the larger aviary walling.



Figure 27 A 2021 view to the smaller 'D-shaped' aviary remnants with the most recent structures and floor decking within (designed and documented by Lahznimmo architects in 2009). The 1910s space has been repurposed as a rest/picnic area with the organic 'cloud-shaped' shelter canopies also acting as a *quasi* interpretation of the former aviary superstructure. The present picnic/shelter access arrangement retains the narrow former aviary keeper's access between the two piers. The stepped access in the foreground represents a recent upgrade (for BCA compliance purposes) to the convenient access provided between the two 'D-shaped' aviary remnants. As evident in this photograph, the steps allow access through to other steps leading to the upper road and floral clock lawn while the on-grade access through the smaller 'D-shaped' aviary also continues through (background in photograph) to the upper road beyond.

4 Consideration of Significance

4.1 Previous Heritage Studies

Previous heritage studies of Taronga Zoo have provided considered assessments of the overall cultural significance of the zoo as well as its various individual components such as structures, landscape, vegetation, views and layout. As the first of the comprehensive site assessment studies, the 2002 Conservation Strategy (GML Heritage) set the benchmark by describing the Taronga site as having national cultural significance for Australia as an urban zoo. Subsequent studies have come to similar conclusions confirming the status of Taronga Zoo within an Australian context. The 2002 Conservation Strategy's statement of significance for the overall zoo has been adopted for all of the more recent heritage impact assessment reports written through the TCSA.

The 2006 Landscape Management Plan provided a further statement of significance with specific reference to the extensive and complex zoo landscape. It contended that the zoo landscape is an inseparable part of Taronga Zoo, "providing the matrix that binds the [many] significant elements of the zoo together and substantially contributes to the definition of the zoo's character". It also stated "the Taronga Zoo landscape is exceptional in the contribution it makes to the significance of the zoo as a whole". Landscape components therefore provide important context for considerations in relation to the present HIA report.

Social value in connexion with Taronga Zoo has yet to be formally studied however it is highly likely that this aspect of cultural significance would form an important part of its overall significance. There is a small, but compelling, hint of this on an exhibition board previously mounted at the former Safari Lodge (near the current 'Waterhole') where an impressive and diverse group of international personalities were recorded visiting Taronga Zoo. A few of these include Eleanor Roosevelt (1947), Alfred Hitchcock and Albert Namatjira (1960), Queen Elizabeth II (1973), Nelson Mandela (2000), Sir David Attenborough and Prince Harry (2003) and many others more recently: Jane Goodall (2009), Lady Gaga (2013), The Duke and Duchess of Cambridge and Prince George (2014), John Cleese (2015) and former US Vice President Mike Pence and his family (April 2017). In the field of zoological science and as a tourism destination, Taronga Zoo clearly continues to have recognition at an international level as well as nationally, within NSW and as a major cultural feature of the Sydney metropolis maintaining a continuous use at this Mosman site for well over 100 years.

4.2 Overall Significance of the Zoo

The 2002 Conservation Strategy provides the following overall statement of significance for Taronga Zoo that gives context for the various individually significant elements that follow in the next section. (The last paragraph of the statement comes from the 2004 Archaeological Management Plan):

Taronga Zoo is a place of national significance as an urban zoo with unique physical and associative attributes, including links with early modern zoo philosophy, a unique and powerful cultural landscape and a wide range of landscape elements, architectural styles and enclosure designs evidencing the development of zoos in Australia.

Features that contribute to Taronga's cultural landscape include the steeply sloping topography of the site; its location on the northern foreshore of Sydney harbour; the exploitation of the natural stone landforms and complimentary faux rock formations; the circulation layout and associated staircase and seating; the exotic and grand built elements used for public buildings and animal enclosures; the native and introduced vegetation on the site, the internal visual corridors within the site and expansive views from the site across Sydney Harbour to the city skyline.

The original fabric at Taronga demonstrates the earliest example in Australia of Carl Hagenbeck's and early twentieth-century European zoological philosophies. In the differing design and approaches to the animal enclosures and aviaries, Taronga also evidences key aspects of international zoological [planning] philosophy that have influenced the Zoo's development throughout the twentieth century.

As an educational, entertainment and recreational facility, Taronga is a highly revered institution within Sydney's social fabric, evoking memories across generations of visitors. The Zoo is also an important keystone in distinguishing Sydney's sense of place. For the zoological community, Taronga is internationally recognised as a leading centre of biodiversity conservation and for the Zoo's educational focus.

Taronga's archaeological resource has some potential to provide information about the Aboriginal community, the early use of the site as a quarantine station and the development of the zoo. In combination, the extensive archive collection, built structures, landscape features and archaeological features at Taronga have great potential for research and community education.

4.3 Individual Elements of Significance

Many of these overall aspects of significance are supported and demonstrated through numerous components that have cultural value individually. Most of these are listed in the current Taronga Zoo s170 Heritage and Conservation Register and noted below in relation to the proposed Reptile & Amphibian Conservation Centre site. Separate tables list individual components for those *within* the site (**Table 4.1**) and those *in the vicinity of* the site (**Table 4.2**). Previously recorded views are considered in **Table 4.3** and illustrated in **Figures 28 to 35**. In the course of investigating the study site for this project, it became evident that there were some further site features that also hold considerable cultural value but haven't, so far, been included on the s170 register. These additional elements are discussed in **Section 4.5**.

4.3.1 Items within the Proposed Reptile & Amphibian Conservation Centre Site

Within the Reptile & Amphibian Conservation Centre site there are some items assessed through previous studies as having individual cultural significance. These are mostly identified and included on the zoo's s170 register (**Figure 2**). Those *within* the precinct and potentially directly affected by the proposal are listed under **Table 4.1** along with the level of assessed significance in each case. Those items assessed as having individual significance located *in the vicinity of* the Reptile & Amphibian Conservation Centre site are listed under **Table 4.2** below.

4.3.2 Chronology of Items within the Proposed Reptile & Amphibian Conservation Centre Site






A further table (**Table 4.4**) is provided that helps clarify the timelines for the various surviving and removed landscape and built elements within, and defining, the proposed Reptile & Amphibian Conservation Centre site. This is in order to better understand the relative historical significance of each item. Elements defining the study site include the upper and lower roads and the (now incomplete) western stepped pathway.





4.4 Archaeology

The Taronga Zoo Archaeological Management Plan, 2004 (Endorsed February 2004) by GML Heritage was the last such review to consider the present study area. The AMP 2004 mapped most of the study site as 'Zone D' indicating that it held no potential for subsurface archaeological evidence and therefore had no archaeological sensitivity. Both upper and lower

roads enveloping the site are designated as 'Zone B' where, as original accessways, they are noted as having high archaeological sensitivity and medium research potential. The remnant 'D-shaped' aviaries and the remnant western pathway are shown as 'Zone C' with medium to low archaeological sensitivity.

However the area where the former western pathway connected with the lower road was where the first platypus (later a coypu) enclosure was located. This was also where an early pond was shown in the 1916 site plan. Not all of this area was wholly impacted by the 1970s Seal Show development such that some evidence may remain of the 1939 platypus structure. If so, it would be regarded as having low research potential and rightly classified under 'Zone C' (see **Figure 37**).

<i>Table 4.1 ITEM/Significance</i>	<i>Zoo Period/Phase</i>	<i>Images</i>	<i>Comments</i>
19B 'D-shaped' Aviaries (perimeter walls) Local/High	By 1916 (In s170 register as New Guinea aviaries)		Aviary mesh and internal structures & superstructures removed 2009.
75L Natural Stone Features Local/High	Pre-Zoo era		Several rock outcrops behind the current temporary Meerkat area
82A Taronga Zoo State/NA	From early 1910s		This provides the overall context for the specific site proposals
99L Original & Early Paths State/Exceptional	1913-1914		Alignments of upper & lower roads + western path partially intact as at early 2021 *
116M Hallstrom Memorial Tablet replica (Originally at zoo entry then relocated to the area known as Hallstrom Square, 1986) Local/Moderate	Unknown (replica) (Original from 1949) Moved to study site in 2019		Painted (copper?) relief tablet replica by Jean Hill (Sir Edward Hallstrom's daughter) donated by the Hallstrom family + stainless steel plates mounted on sandstone plinth. Proposed to be relocated to permanent zoo location elsewhere.

<p>130L Steel pipe balustrading Local/High</p>	<p>1916</p>		<p>While the emphasis appears to be on the balustrading, the actual path is itself an early access link between the stairs above (Item 56L) and below (Item 25L) this area</p>
<p>151L Rustic stone garden walls Local/Moderate</p>	<p>c. 1920s- 1940s</p>		<p>Behind aviaries</p>
<p>163L Waterhousea floribunda avenue Local/High</p>	<p>Probably by 1920s</p>		<p>4 mature trees remain within the present site lining the upper road (eastern end) (with a 5th tree located across the road to the east)</p>
<p>201L Piccabeen (Archontophoenix cunninghamiana) Local/High</p>	<p>Only one young Piccabeen found under Waterhousea ave.</p>	<p>Although no old Piccabeen palms were found under the Waterhousea avenue, an older palm is located further west and this plant may relate to the s170 Item 201L listing in which case refer to Section 4.5 below and Figures 38 to 40.</p>	<p>Not found where stated in s170 register</p>
<p>202L Three palms (Livistona australis) Local/High</p>	<p>Interwar Period</p>		<p>Two palms along lower road. A third Cabbage Palm occurs in the Meerkat enclosure (not listed)(NB. Arrows)</p>
<p>258L Camellia group Local/Moderate- High (Uncommon cvv.)</p>	<p>1990s</p>	<p>See under Item 163L photograph above</p>	<p>Camellia japonica & C. sasanqua group (includes uncommon cultivars) under Waterhousea avenue</p>
<p>269L Puriri (Vitex lucens) N/A</p>	<p>Died & removed</p>	<p>N/A</p>	<p>GONE</p>

* Note while the upper and lower roads are obviously included on the s170 Register under Item 99L, the remnant western pathway is also, but less obviously, included as part of the Item 99L listing though only the upper section remains. The associated Edwardian pipe handrails and posts (Item 130L) mostly remain intact.

Table 4.1 Heritage Items within the proposed Reptile & Amphibian Conservation Centre site (from s170 Register)

Table 4.2 ITEM	Significance	Zoo Period/Phase	Comments
12B Fmr Upper Seal Pools (now play area)	Local/High	Le Souef period	Pools filled in and redeveloped for Lemur Forest area in 2012/2013 after seals moved 2009
13B Floral Clock site	State & Local/Exceptional (clock) & High (other elements)	1928	
21B Indian Elephant Temple	State/Exceptional	1915	Restored 2006
117B Elliptical aviary (Formerly parrot aviary then repurposed for other animals before being subsumed into 1996 Gorilla area)	N/A (Substantially changed fabric but very basic elliptical space remains) (Noted in s170 register as De Brazza's Guenon enclosure)	1915	Redeveloped 1996 as part of Gorilla enclosure and now little recognisable
118L Ponds/islands (Formerly for Gibbons, now Tamarin)	Local/High	1916	Additional work c. 1980s
195L Relocated palms (from Gorilla redevelopment)	Local/High	Interwar period	Mature palms – Skyduster (<i>Washingtonia robusta</i>) & Cabbage palm (<i>Livistona australis</i>) relocated 1996
196L Relocated palms (from former Penguin pond)	Local/High	Interwar period	Mature palm group – spp. not specified

Table 4.2 Heritage Items in the Vicinity of the proposed Reptile & Amphibian Conservation Centre site (from s170 Register). Refer to the s170 Register and Landscape Management Plan 2006 for images of the items.

Table 4.3 VIEWS To Site & Harbour	Significance	Comments (REFER APPENDIX D FOR LOCATION PLANS FROM LMP 2006)
LMP 2006 Views 14/44 from the Serpentine path and associated lawn area	High	Views to the harbour remain looking over the present site where the tops of tree canopies are evident (refer to Figures 28 to 30 and 33)
LMP 2006 View 28 Glimpse	Moderate	Longer views greatly reduced (refer to Figure 31)
LMP 2006 View 30 Glimpse	Moderate	View dominated by former Bull elephant barn (Figure 32)
LMP 2006 View 36/46 Filtered view	Moderate	V36 no longer evident (Figure 31) & V46 curtailed/compromised (Figure 32)
LMP 2006 View 49	High	Remains as a vista to former Indian Elephant temple (Figure 34)

Table 4.3 Previously recorded views in relation to the proposed Reptile & Amphibian Conservation Centre site. These were noted in the Landscape Management Plan 2006 and significance is solely in terms of local value. Refer to **Appendix D** for view location plans.

Table 4.4	Timeline										
ITEM	1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Gully*	Pre-zoo										
Sloping landform	Pre-zoo										
Sandstone outcrops**	Pre-zoo										
Indigenous Vegetation†	Pre-zoo										
Roads	Built										
Early (stepped) path along western boundary	Built							Lower part realigned or remov.		Lower Part gone	Half intact
Edwardian handrails & posts assoc. with previous path								Lower part remov.			Upper part mostly intact
D-shaped aviaries	Built									Super struct. demol. 2009	Base walls only
Waterhousea avenue	??	Planted									
Oldest palms See NB below	Planted						Trans-planted			??	
Small ponds	Built										
Platypus/Coy-pu enclosure		Built					Remov ed for Seal Show				
Central pond (Leopard Seal)				Built			Remov ed for Seal Show				
Seal Show							Built			Demol. 2009	
Penguin enclosure							Repur-posed?				
Meerkat enclosure											Repur-posed
Camellia group									Planted		
Picnic Shelter development											Built
Puriri									Planted		Gone

* Since removal of the 1970s Seal Show buildings it is now easier to appreciate the natural form of the main eastern gully in relation to the study site.

** Several substantial *in situ* rock outcrops remain within the study site – located behind the Meerkat enclosure and within the larger aviary site (see **Figures 11, 24 and 43**).

† Locally indigenous vegetation has been progressively lost from the study site since the initial 1910s development with the last major phase of removal for the late 1970s Seal Show development.

NB. Apart from the three *Livistona* palms along the lower access road, a group of older palms remain to the east of the lookout deck along the upper access road. The palms include *Livistona australis*, *Howea forsteriana* and *Archontophoenix cunninghamiana*.

Table 4.4 Relative timeline for heritage Items within the proposed Reptile & Amphibian Conservation Centre site.



Figure 28 ABOVE A 2021 view from the Serpentine pathway looking across the Helmore Lawns to Sydney Harbour (General View V14 in the 2006 LMP). **Figure 29** BELOW View from the Helmore Lawns over the former upper seal pool and the present site (Framed View V44 in the 2006 LMP).





Figure 30 ABOVE Panorama from the former upper seal pool (current Forest Adventure/Capybaras) pathway across the present site where tree canopies are visible. **Figure 31** BELOW View from above the Floral Clock lawn to the study site (no harbour views possible). **Figure 32** BOTTOM Vista from near the Floral Clock lawn where the large elephant barn (arrow) obstructs earlier views of the harbour though residential towers at Darling Point and Darlinghurst are visible in the distance.





Figure 33 Vista from the edge of the Floral Clock lawn (left foreground) with the eastern end of the former upper seal pool to the right. The present study site is directly ahead where the planting is so dense and effective as a visual screen that views across the site and into the site are no longer possible.



Figure 34 ABOVE Vista from the descending arm of the upper road with its junction with the lower road in the foreground. The terminal trees of the Satinash (*Waterhousea floribunda*) avenue frame this view. The restored Indian Elephant Temple is the undoubted focus of this impressive vista. However in the more natural view – given normal human peripheral vision with its naturally wider arc – the former Indian Elephant Temple is now immediately juxtaposed with the over-scaled, bulky bull elephant barn that dominates the view in **Figure 35** BELOW.



Zone	Archaeological Management	Archaeological Potential	
3	Areas of original bushland and rock surfaces	High	If subsurface disturbance proposed obtain "preliminary research permit", test trench, MLALC to monitor. If relic found AHIP required.
4	Areas heavily modified by European development	Medium to Low	Brief contractors if subsurface disturbance proposed and if relics exposed cease work and report to MLALC and NPWS and act as for Zone 3.
5	Areas previously excavated down to bedrock or culturally sterile profile	None	No further Aboriginal archaeological input required. Act as for Zone 3 if any relic is found (unlikely).



Figure 36 Extract from the 2004 GML Archaeological Management Plan showing relevant zones for potential Aboriginal archaeology. The zoning reflected in this graphic from 2004 is probably broadly accurate though at a more detailed site level the zonings could be further refined. For example, there are several areas where exposed natural sandstone is evident and where there appears to be little disturbance. These very small areas would more rightly be regarded as applying to Zone 3 on the GML table above. Elsewhere, some isolated areas shown as Zone 4 probably should be regarded as Zone 5 as earlier exhibits/enclosures were known there (such as the former platypus/coyupo site at the western end). More detailed reviews of the site have been subsequently carried out by both Dennis Foley (ANU) and Meggan Walker (Urbis) and reference is made to those sources for further information about the site's status in relation to potential Indigenous heritage resources.

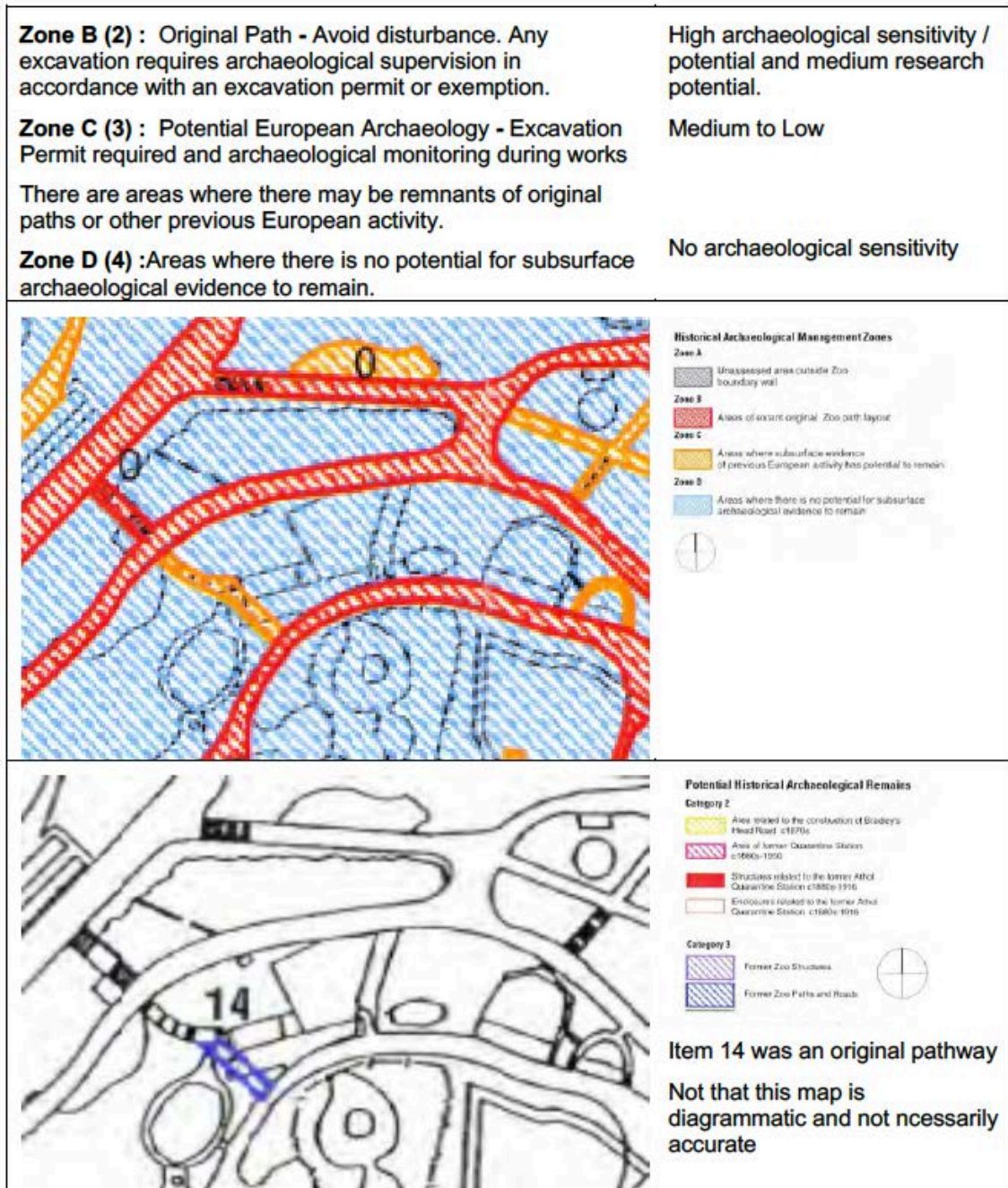


Figure 37 Extract from the 2004 GML Archaeological Management Plan showing relevant zones for potential European archaeology. As with the mapping of potential Aboriginal heritage resources (see **Figure 36** above), the mapping for potential European archaeological resources is probably sufficient at a broad level, however further refinement is warranted at a much more detailed site specific level. Item 14 (original pathway) is actually more complicated than the graphic above implies. There were two paths leading off the stepped path shown extending from the upper access road in the shape of a 'forked-tongue'. The former eastern 'fork' was removed for the construction of the late 1970s Seal Show (**Figure 18**). It appears on early site plans, for example **Figures 7** and **26**. The western 'fork' extended around the former platypus/coypu enclosure and was also later removed. So the upper half of the former (and early) stepped path linking the main upper and lower access roads remains but is no longer publicly accessible. A detailed review of the overall site has been undertaken by Meggan Walker (Urbis) and reference is made to that report for further information about the site's historical archaeological status.

4.5 Additional Site Elements

In addition to all of these previously acknowledged site features, there are a number of other site elements of cultural value (**Figure 38**) that have been hitherto overlooked in earlier studies. These include the **extent** of natural rock outcropping (mainly because of the overgrown nature of some parts of the site over many decades)¹⁶ mentioned previously as s170 Item 75L as well as various plantings:-

- * a number of mature palms that are either part of the early palm plantings shown in **Figure 20** (such as the prominent Kentia Palm) or were planted in earlier locations but have been moved to their current position as a result of previous development projects;¹⁷
- * smaller plantings within the Meerkat enclosure such as the *Aloe ferox*, *Euphorbia tirucalli*, *Yucca* sp. and *Phoenix* sp. (**Figure 41**);
- * other smaller plantings (cycads, Gynea lilies) that have matured since their introduction and now represent valuable attributes from an amenity perspective;
- * and more recent plantings of the uncommon African strangling fig tree (*Ficus craterostoma*) to the immediate west of the large aviary remnants (**Figure 42**).¹⁸

The mature palms (**Figures 39 and 40**) would be considered of high cultural significance as representatives of earlier phases of the zoo's development. Other, smaller plantings would be considered of moderate cultural significance for their amenity value and suitability for reuse elsewhere within the zoo estate. All of these plantings could be readily transplanted elsewhere and used to good effect as instant landscape assets. The African strangling fig trees (*Ficus craterostoma*) are certainly culturally significant because of their rarity in cultivation in Sydney and should be added to the zoo's s170 register.

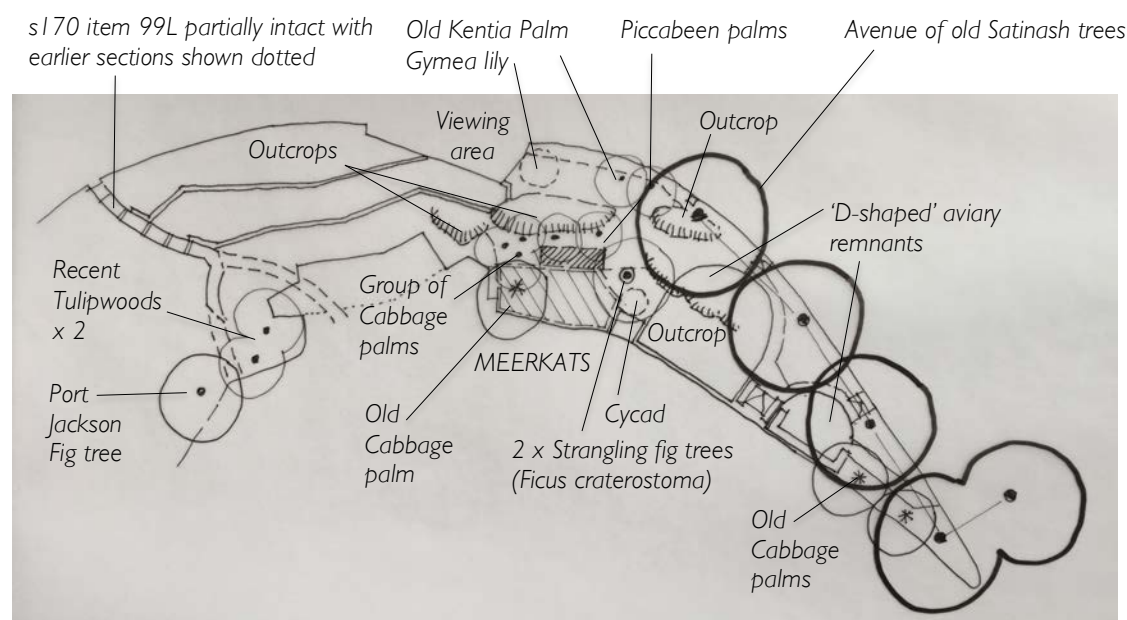


Figure 38 Site plan indicating additional elements of value within the study area. (Not to scale and s170 register site plan used as a base)

¹⁶ One of these rock outcrops coincides with the larger aviary walling where the latter has been built over the outcrop (**Figure 43**).

¹⁷ Note that the mature Cabbage Palm (*Livistona australis*) within the Meerkat enclosure is likely also a relocated planting from elsewhere within the zoo however, for this report, it has been included with the two similar palms at the eastern end of the site under the s170 listing Item 202L.

¹⁸ *Ficus craterostoma* would be regarded as uncommon, if not rare, in cultivation in Sydney and probably NSW. *Ficus craterostoma* is a strangling fig from the Afrotropics and is uncommon in cultivation even in South Africa.



Figure 39 ABOVE LEFT Kentia Palm (*Howea forsteriana*) and Piccabeen palm (*Archontophoenix cunninghamiana*) behind along the upper access road. **Figure 40** ABOVE RIGHT Piccabeen palm (*Archontophoenix cunninghamiana*) left next to Meerkat back-of-house structure with a group of Cabbage palms (*Livistona australis*) to the right. **Figure 41** BELOW View of the current temporary Meerkat enclosure showing various smaller plantings that reinforce the intended thematic African environment. These include *Aloe ferox* and *Yucca* (left next to the Cabbage palm trunk) and *Euphorbia tirucalli* and *Phoenix* (right background) possibly relocated from the former African Savannah enclosures. To the left of the *Phoenix* sp., and behind the enclosure wall, are two representatives of an unusual and uncommon fig tree species (*Ficus craterostoma*)(see **Figure 42**).





Figure 42 ABOVE African strangling fig trees (*Ficus craterostoma*) between the Meerkat enclosure and the larger aviary walling.

Figure 43 BELOW Detailed view of the western wall of the larger aviary showing its construction over and across (arrows) one of the natural rock outcrops in this area.



5 The Proposal

5.1 Basis of Assessment

Potential heritage impact has been assessed in this report on the basis of the following information:-

- * Development Application set provided by **dwp** architects (plans, sections, elevations, computer-generated renders and a Design Statement) issued 23 June 2021 with several subsequent updates for particular drawings; and
- * DA Landscape Package, July 2021 by Context Landscape Architecture.

5.2 Brief Description

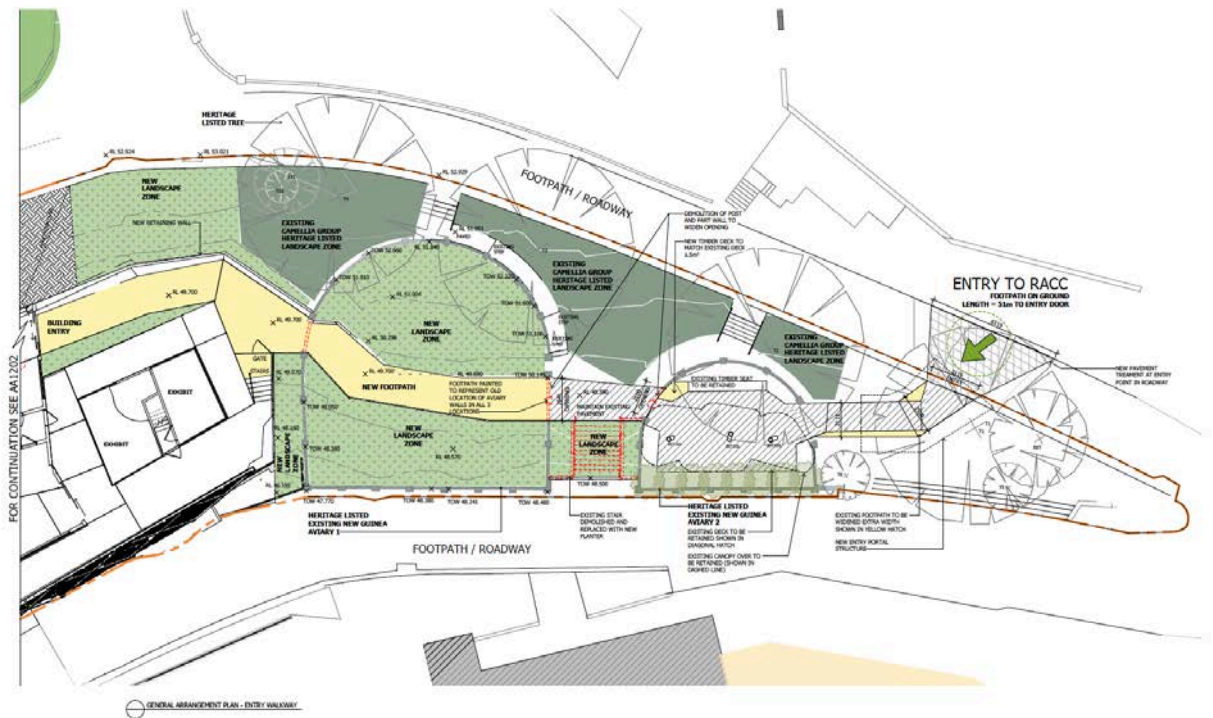
A compact new three-storey Reptile & Amphibian Conservation Centre building (total floor area of about 1200 square metres) is proposed within the study area to replace the existing reptile and amphibian complex currently located towards the upper western side of the zoo. The proposed building would mostly fall within the zone previously occupied by the Seal Show building group, extending from the former western stepped access (between the upper and lower roads) across to, and over, the existing temporary Meerkat enclosure. A long on-grade path access from the east is proposed that traverses through both 'D-shaped' aviary remnants to link with Level 1 of the proposed building. A small, isolated 'portal' structure is also proposed at the eastern end of the long Level 1 entry path though is yet to be designed.

In relation to façade treatment, an accompanying Design Statement describes the main southern elevation of the proposed building as "the most visually prominent element of the site. A two-storey slanted green wall screen structure is used to camouflage the built forms of the building and ramps beyond. A diagonal structure, derived from the patterning of reptile skin, envelopes the building. Within this structure is a series of diagonal wire-trellis frames, to provide the opportunity for the growth of vine climbing plants. Over time, the vegetation will grow and thicken, providing a constantly evolving facade. This green wall structure can be enjoyed and experienced by guests as they circulate within the building and up the ramp to level 2". And in relation to proposed materials and finishes, the Design Statement indicates these to be:-

- "- The predominate south facade material is a green wall structure, which consists of a diagonal steel structure, trellis wires and vine climbing plants;
- The main building cladding consists of a diagonal scribed patterned prefinished cladding, in a matte grey finish;
- Accent cladding to the awning hood over the conservation rooms is zinc look cladding;
- Screening devices consist of timber look vertical battens, tying in with the existing timber materiality across the zoo;
- Roofing finishes of Level 1 consists of a mixture light grey metal sheet roofing and a translucent finish;
- Window frames and accent features are dark monument grey colour;
- Hardscape paving treatments and retaining wall elements are intended to be natural earth-toned coloured elements".¹⁹

The **dwp** DA documentation indicates that no major sections of the original 1910s circulation network (upper and lower access roads) are proposed to be altered. A minor component of this network – the partial western stepped pathway adjoining the current Gorilla enclosure – is proposed to be retained but remain closed to the public and restricted to authorised access in relation to the Gorilla enclosure. Apart from some view considerations, potential heritage impact issues are largely restricted to within the study area.

¹⁹ **dwp** architects, 23 June 2021 DA submission, *Architect Design Statement*, p. 10 (7 June 2021, Form A400)



LEGEND

- NEW LANDSCAPE ZONE
- EXISTING CAPPELLA GROUP HERITAGE LISTED LANDSCAPE ZONE
- EXISTING NEW GUINEA AVIARY 1
- EXISTING NEW GUINEA AVIARY 2
- NEW EXHIBIT
- NEW DETACHED WALL
- NEW FOOTPATH
- FOOTPATH / ROADWAY
- HERITAGE LISTED TREE
- ENTRY TO RACC
- NEW EXHIBIT STRUCTURE
- EXISTING STAIRS
- NEW EXHIBIT

NOTE: REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR DETAILS ON NEW LANDSCAPE PLANTING AND PAVEMENT TREATMENTS REFER TO CIVIL ENGINEER'S DRAWINGS FOR PROPOSED DRAINAGE AND PAVEMENT DETAILS

SCHEMATIC DESIGN

NO.	DESCRIPTION	DATE	BY	CHKD.
1	SCHEMATIC DESIGN	20/08/20	DP	DP
2	SCHEMATIC DESIGN	20/08/20	DP	DP
3	SCHEMATIC DESIGN	20/08/20	DP	DP
4	SCHEMATIC DESIGN	20/08/20	DP	DP

CLIENT: TARONGA ZOO
PROJECT: REPTILE & AMPHIBIAN CONSERVATION CENTRE
GENERAL ARRANGEMENT PLAN - ENTRY + LANDSCAPING
 Scale: 1:100
 Date: 6/2/2021 3:27:23 PM

dwip **zoo**

Figure 46 ABOVE Reptile & Amphibian Conservation Centre General Arrangement Plan – Entry/Landscaping AA1200 and Figure 47 BELOW General Arrangement Plan – Ground Floor AA1201 for the proposed RACC (Both courtesy *dwip* architects)



LEGEND

- NEW LANDSCAPE ZONE
- EXHIBIT
- NEW EXHIBIT
- NEW DETACHED WALL
- NEW FOOTPATH
- FOOTPATH / ROADWAY

NOTE: REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR DETAILS ON NEW LANDSCAPE PLANTING AND PAVEMENT TREATMENTS REFER TO CIVIL ENGINEER'S DRAWINGS FOR PROPOSED DRAINAGE AND PAVEMENT DETAILS

SCHEMATIC DESIGN

NO.	DESCRIPTION	DATE	BY	CHKD.
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2	SCHEMATIC DESIGN	20/08/20	DP	DP
3	SCHEMATIC DESIGN	20/08/20	DP	DP
4	SCHEMATIC DESIGN	20/08/20	DP	DP

CLIENT: TARONGA ZOO
PROJECT: REPTILE & AMPHIBIAN CONSERVATION CENTRE
GENERAL ARRANGEMENT PLAN - GROUND FLOOR
 Scale: 1:100
 Date: 6/2/2021 3:27:34 PM

dwip **zoo**

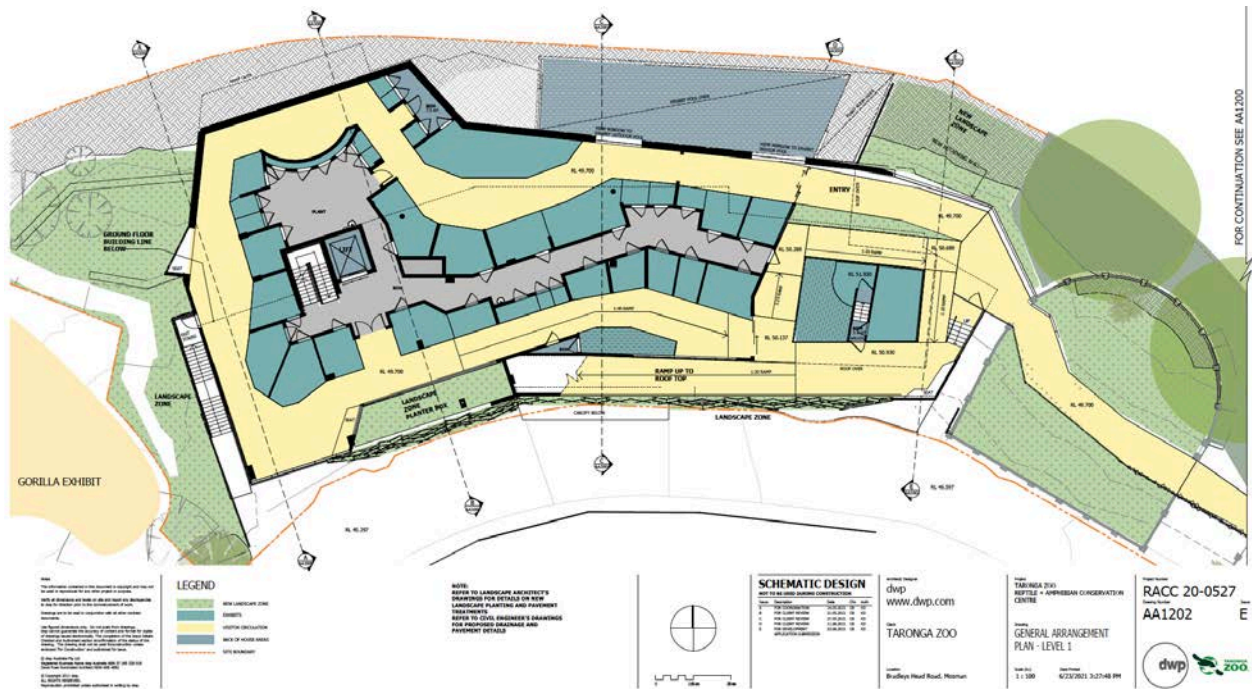
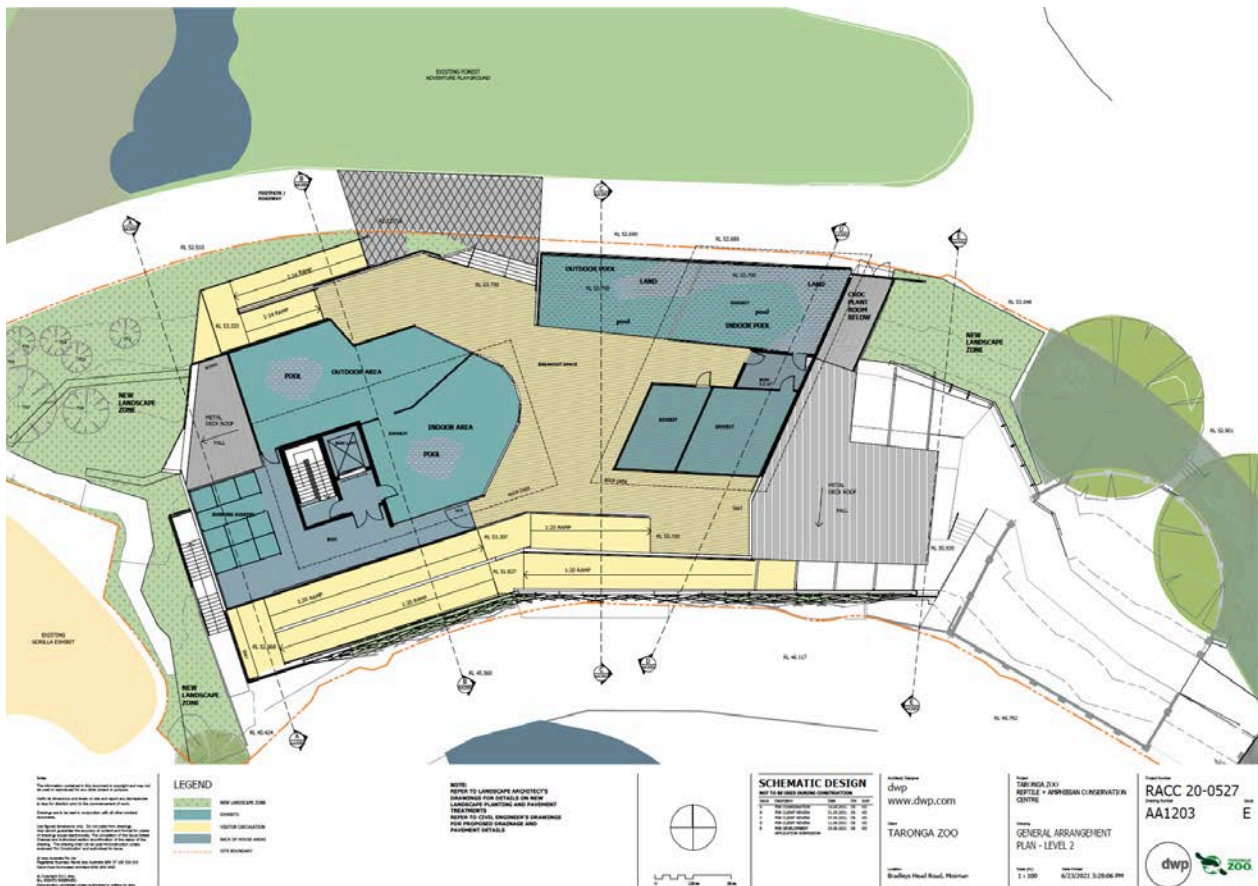


Figure 48 ABOVE Reptile & Amphibian Conservation Centre General Arrangement Plan – Ground Floor AA1202 and Figure 49 BELOW General Arrangement Plan – Ground Level 2 AA1203 for the proposed Reptile & Amphibian Conservation Centre (Both courtesy **dwp** architects)



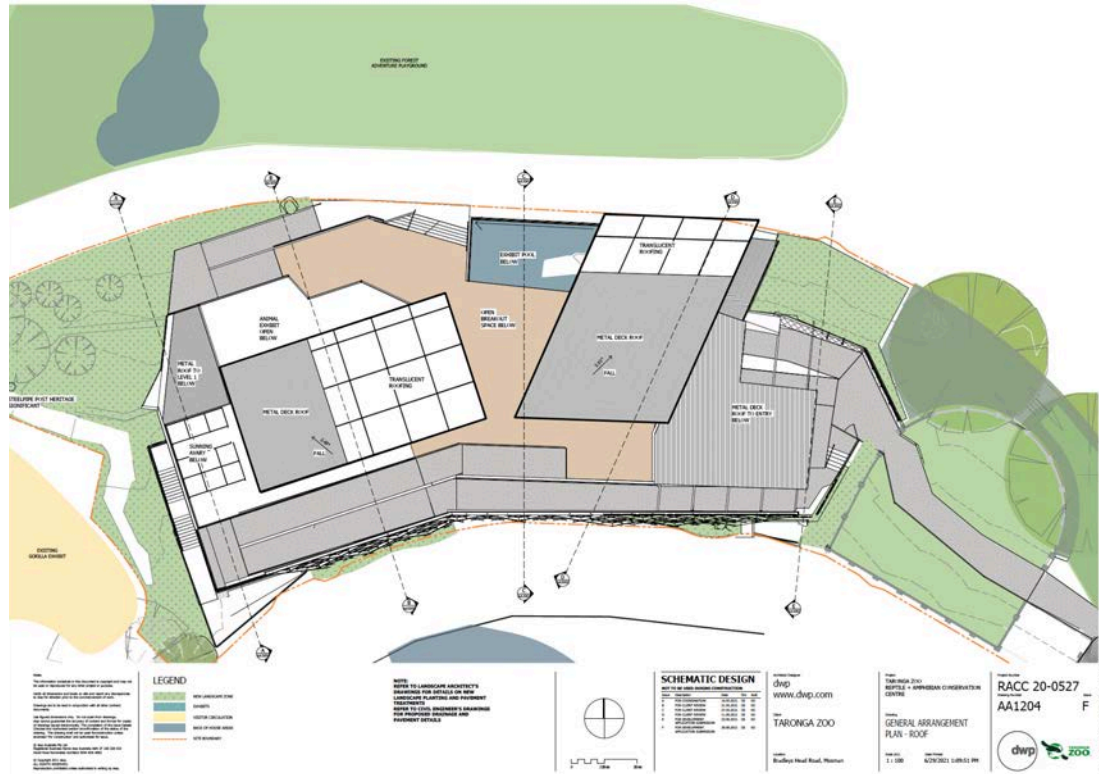
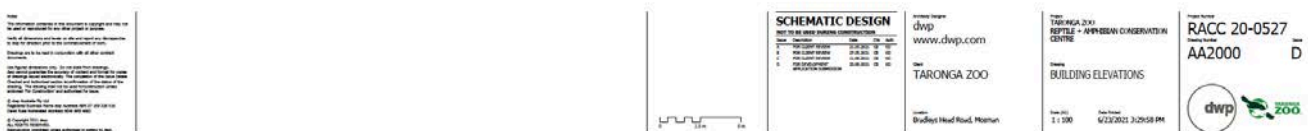
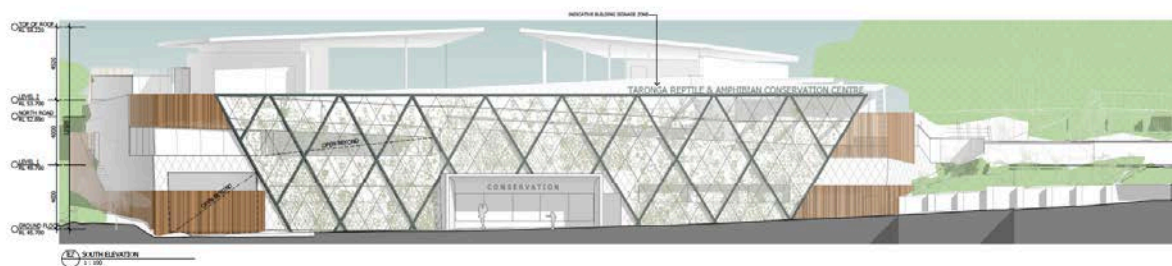
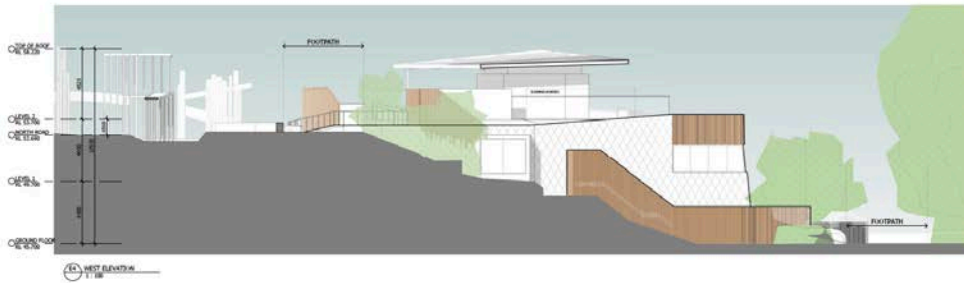


Figure 50 ABOVE Reptile & Amphibian Conservation Centre General Arrangement Plan – Roof AA1204 and Figure 51 BELOW Building Elevations AA2000 for the proposed RACC (Both courtesy dwp architects)





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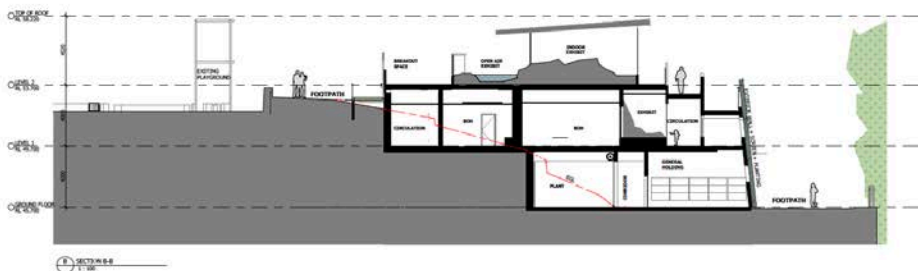
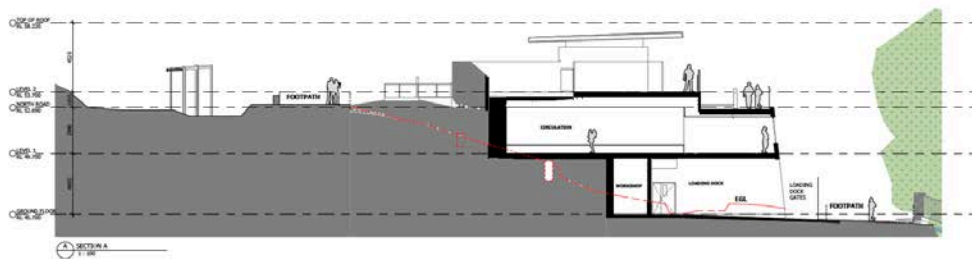
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 REF: 20-0527-001
 DATE: 02/03/2021
 SCALE: 1:100
 PROJECT: TARONGA ZOO
 ADDRESS: BlueBay Head Road, Mosman

dwg
 www.dwp.com
 TARONGA ZOO
 BlueBay Head Road, Mosman

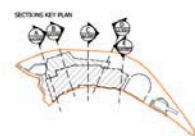
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 BUILDING ELEVATIONS
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RACC 20-0527
 AA2001
 D

Figure 52 ABOVE Reptile & Amphibian Conservation Centre Building Elevations AA2001 and Figure 53 BELOW Building Sections AA3000 for the proposed Reptile & Amphibian Conservation Centre (Both courtesy *dwp* architects)



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 ADDRESS: BlueBay Head Road, Mosman

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 BlueBay Head Road, Mosman

TARONGA ZOO
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 BUILDING SECTIONS
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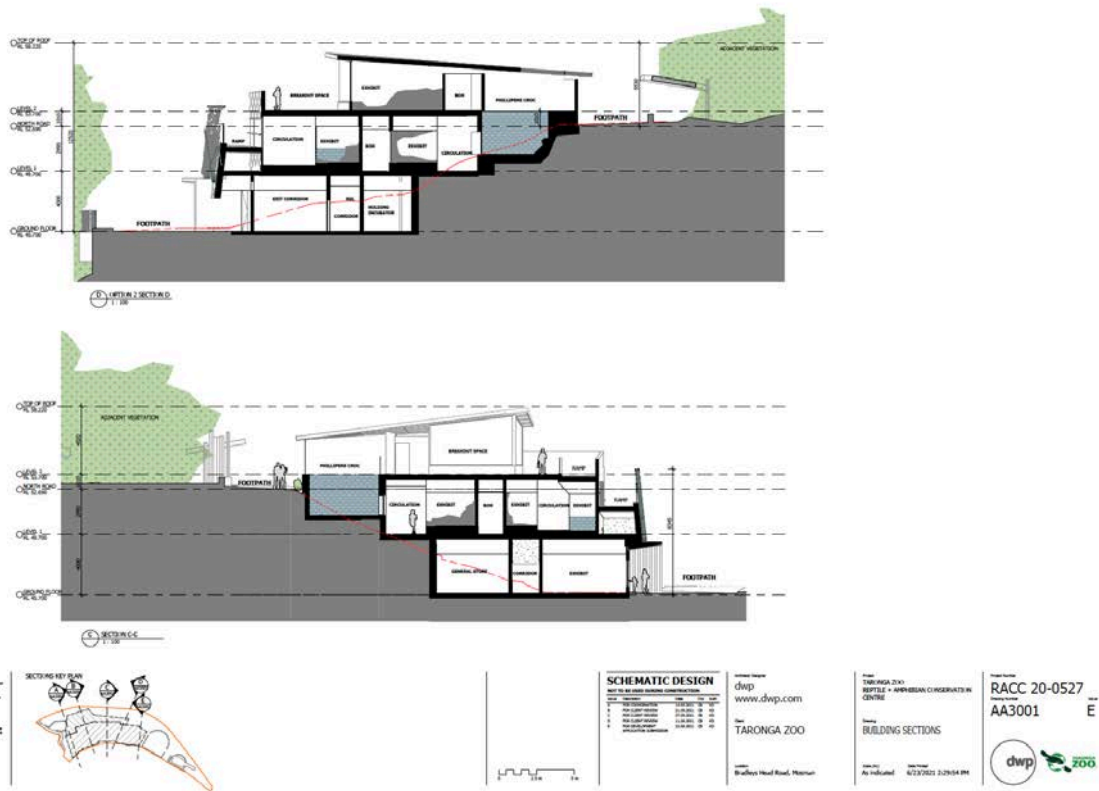
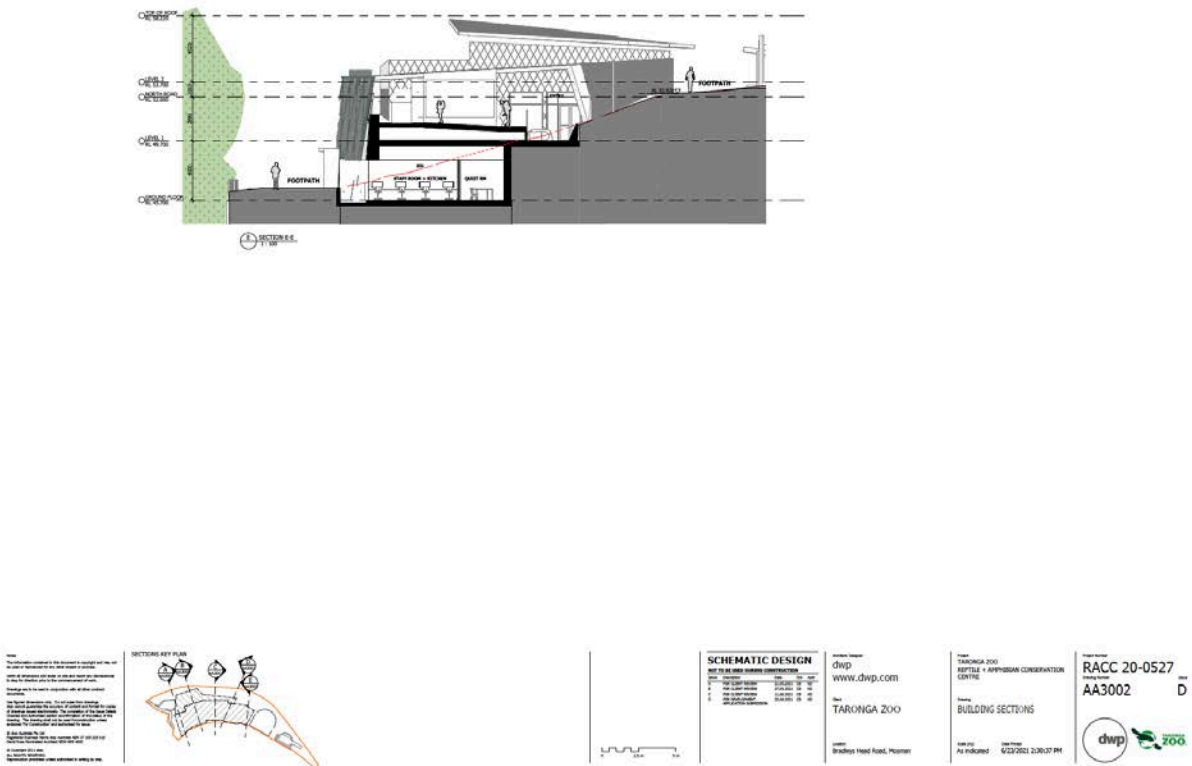


Figure 54 ABOVE Reptile & Amphibian Conservation Centre Building Sections AA3001 and Figure 55 BELOW Building Sections AA3002 for the proposed Reptile & Amphibian Conservation Centre (Both courtesy *dwp* architects)





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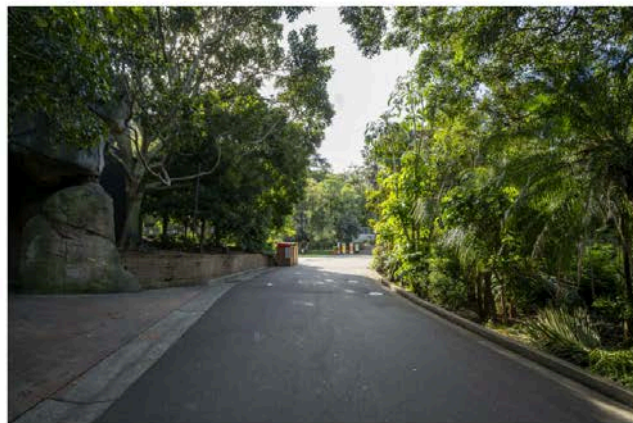
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 REPTILE + AMPHIBIAN CONSERVATION CENTRE
 DRAWING: 3D RENDER
 SCALE: 1:1000
 SHEET: AA0001

Project Name: TARONGA ZOO REPTILE + AMPHIBIAN CONSERVATION CENTRE
 Architect: dwp
 www.dwp.com
 Location: Taronga Zoo
 Address: Bradleys Head Road, Mosman

Project Number: RACC 20-0527
 Drawing Number: AA0001
 Date: 02/23/2021 2:15:02 PM



Figure 56 ABOVE Reptile & Amphibian Conservation Centre 3-D Render and Figure 57 BELOW 3-D Views I for the proposed Reptile & Amphibian Conservation Centre (Both courtesy dwp architects)



EXISTING - VIEW 1



NEW CONSTRUCTION - VIEW 1



SCHEMATIC DESIGN
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 TIME: 2:15:02 PM
 PROJECT: TARONGA ZOO
 REPTILE + AMPHIBIAN CONSERVATION CENTRE
 DRAWING: 3D VIEWS 1
 SCALE: 1:1000
 SHEET: AA0002

Project Name: TARONGA ZOO REPTILE + AMPHIBIAN CONSERVATION CENTRE
 Architect: dwp
 www.dwp.com
 Location: Taronga Zoo
 Address: Bradleys Head Road, Mosman

Project Number: RACC 20-0527
 Drawing Number: AA0002
 Date: 02/23/2021 2:15:02 PM





EXISTING - VIEW 2



NEW CONSTRUCTION - VIEW 2



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DATE	20/01/2021
BY	www.dwp.com
FOR	TARONGA ZOO
PROJECT NO.	RACC 20-0527
PROJECT NAME	REPTILE & AMPHIBIAN CONSERVATION CENTRE
VIEW NO.	3D VIEWS 2
DATE	11/08/2021
TIME	10:45 AM
LOCATION	Bullfinch Head Road, Mosman

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FOR	TARONGA ZOO
PROJECT NO.	RACC 20-0527
PROJECT NAME	REPTILE & AMPHIBIAN CONSERVATION CENTRE
VIEW NO.	3D VIEWS 2
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TIME	10:45 AM
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TARONGA ZOO
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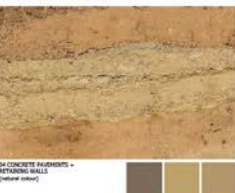
Figure 58 ABOVE Reptile & Amphibian Conservation Centre 3-D Views 2 and Figure 59 BELOW External Finishes for the proposed Reptile & Amphibian Conservation Centre (Both courtesy dwp architects)



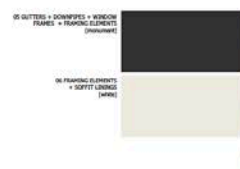
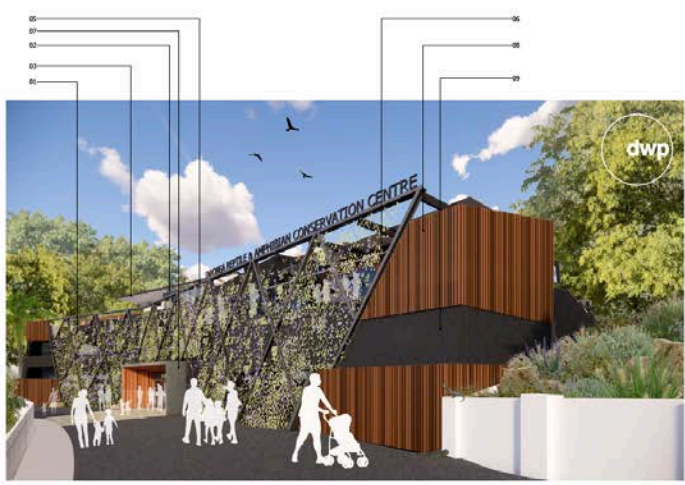
01 STAINLESS STEEL CABLE WIRE GREEN SCREEN
 (Supports steel wire to support landscape vines on southern side of building)



02 TRANSLUCENT ROCK
 03 METAL DECK SCOPS (dark grey)



04 CONCRETE PAVEMENTS - RETAINING WALLS (natural colour)



05 GUTTERS & DOWNPIPES + WIRECOB FINISHES + FRAMING ELEMENTS (dark charcoal)
 06 FRAMING ELEMENTS + SOFFIT LININGS (white)



07 SCABROUS WOOD CLADDING (dark charcoal)



08 EXTERNAL SCREENS (dark charcoal screen system)



09 EXTERNAL CLADDING FIBRE CEMENT SHEET WALL SYSTEM

Notes:
 1. The client has requested that the building be designed to support and promote the use of native plants and animals in the landscape.
 2. The building should be designed to be a landmark building.
 3. The building should be designed to be a landmark building.
 4. The building should be designed to be a landmark building.
 5. The building should be designed to be a landmark building.
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PROJECT NAME	REPTILE & AMPHIBIAN CONSERVATION CENTRE
VIEW NO.	EXTERNAL FINISHES
DATE	11/08/2021
TIME	10:45 AM
LOCATION	Bullfinch Head Road, Mosman

TARONGA ZOO
 REPTILE & AMPHIBIAN CONSERVATION CENTRE
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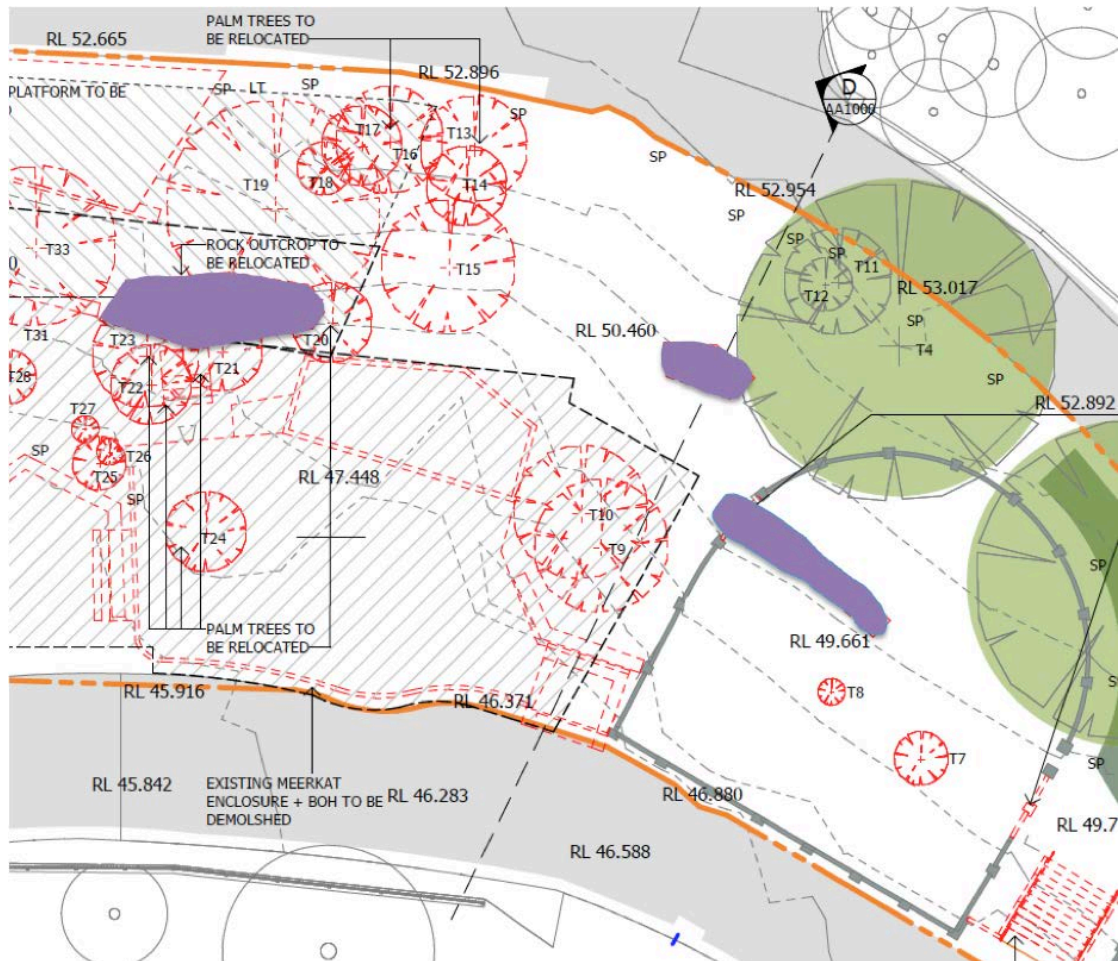


Figure 60 Detail of the Demolition Plan highlighting the documented main rock outcrops (purple) affected by the proposed RACC development though exact positions and extent of outcropping is not necessarily accurate (Base courtesy **dwp architects**)

5.2 TCSA Rationale for Proposal

The main rationale for replacing the existing reptile and amphibian complex is that it is outdated in terms of:-

- * animal presentation and animal welfare;
- * commercial expectations and guest experience; and
- * health, safety and efficiency.²⁰

In contrast, the proposed new building is described by its architects as “a world-class reptile and amphibian exhibition and animal care facility, achieving operational efficiencies and safety”. Taronga Zoo advocates a contemporary approach to animal welfare in order to ensure industry accreditation in Australia by complying with existing and emerging animal welfare legislation. This often means that zoo buildings need to be upgraded or replaced to match evolving modern welfare science.²¹

²⁰ **dwp architects**, *Architect Design Statement*, p. 3

²¹ Part of the project rationale provided by TCSA Life Sciences staff for the recent African Savannah development.

6 Heritage Impact Assessment

Generally, impacts on the zoo setting and particular zoo elements assessed as having cultural significance will take two basic forms – significance will be potentially affected as a result of the removal or modification of significant items (or even the relocation of significant elements); and significance may be potentially affected by the introduction of new structures or elements in the vicinity of retained heritage items.

In considering potential impacts on the heritage resource arising from a new Reptile & Amphibian Conservation Centre (RACC), this assessment reflects that the current proposal was basically at a schematic design stage at the time of writing of this report.

6.1 Potential for Heritage Impact

6.1.1 Impact on the Taronga Zoo Setting

While the proposed three-level building is a compact way of accommodating a considerable amount of floor space within a relatively small area, it does mean that, for about half of this particular study site, there will not be the opportunity to retain or reintroduce large tree canopies. The site was originally covered in woodland vegetation and this persisted for some decades after the zoo was established. It remained with some tree cover in subsequent decades until the late 1970s Seal Show was built. When this was removed in 2009/2010 that part of the site was quickly revegetated as it is at present. The new building will mean the removal of all of this vegetation and replacing it with a structure with minimal vegetative substance between the upper and lower access roads.

One of the hallmarks of the overall zoo is that it is generally recognised as a landscape-dominated site when seen from the harbour or the extensive southern shores of the harbour. Most buildings appear to be well integrated visually and this principle in turn ensures that the zoo campus as a whole contributes to the impression that the Mosman shoreline and defining ridges are characterised as a well-vegetated landscape. When large buildings are visible from the harbour, most appear as pavilions within the landscape. An implication then, is that every effort should be made to ensure that new buildings within the zoo are convincingly integrated within the zoo landscape and do not unduly dominate the zoo's (and Sydney Harbour's) landscape setting. This is particularly the case with large plate and multistorey buildings (such as the RACC development).

Another general observation with important implications for the internal zoo landscape is that, as with the Seal Show complex previously, it would no longer be possible to readily appreciate the continuation of the main eastern gully or natural landform of this part of the zoo. The proposed RACC building would effectively subsume the gully form and mask an appreciation of the steeply descending slope between the upper and lower roads. The main gully was otherwise an important intrinsic element of the zoo and provided the impetus for a number of earlier zoo features of note that 'celebrated' the gully such as the rustic bridge and series of ponds below the site as well as the large former 'oceanic' ponds above the site. The landscape documentation accompanying the architectural drawings does acknowledge the former creek line by proposing a dry creek bed at the western edge of the development.

Apart from these observations, in relation to the proposed new Reptile and Amphibian Conservation Centre development, the following potential impacts have been identified in relation to the Taronga Zoo setting:-

- The compact nature of the new RACC building would allow the eastern part of the study site to remain largely as it is, including its tree canopy, under plantings (especially camellias) and remnant layout. This would be a positive heritage outcome.

- The current design of the long eastern on-grade path access to Level 1 of the proposed RACC building allows for the substantial retention of the former 'D-shaped' aviary remnants as well as opportunities to interpret the early aviaries as some of the first structures to be built at the zoo. Although some sections of the remnant aviary walling (for both aviaries) would need to be removed, on balance this would be a better heritage outcome (as it would enable the retention of most of the aviary fabric and enable the old features to be appreciated) than an elevated ramp structure obscuring them (which would otherwise be the result if all of the existing aviary walling were to be retained).
- From the upper access road there are currently fewer view opportunities to look out over the study site to the harbour or southern shores. While the new RACC building would involve the removal of the existing vegetation within its footprint, it would also mean that, at least for Level 2 (the uppermost level), new view prospects would become available which would be regarded as a positive heritage outcome.
- From various parts of the lower access road, on approach to the site, the new RACC building would potentially present as a two to three-storey structure emerging from largely landscape-dominated western and eastern flanks. However within the immediate zoo setting the existing Indian Elephant Temple and former bull elephant building to the southeast and south respectively offer some precedence (of larger structures within this precinct). The scale of the proposed building appears modulated at the end elevations by the tiered layers of alternating cladding finishes. A successful integration within the site of the main southern elevation relies very heavily on the horticultural effectiveness of the proposed vegetative 'skin' using climbers across a network of cables. Where viable and well established, this skin would potentially enable the building to recede within its setting and reduce its apparent scale and otherwise contrasting and strong urban character.
- Owing to the three-storey height of the proposed building, and depending on the final surface treatments (particularly material reflectivity and colours) of the upper level pavilions, there may be some potential for the building to be visible from Sydney Harbour. However such views would be likely mitigated by distance and by the restricted scale – reduced bulk or form - of the upper level pavilions.
- The design of any future portal structure at the eastern end of the long entry pathway to Level 1 of the new building will need careful attention in the context of a variety of existing structures of contrasting architectural forms and 'styles' – the existing rounded, 'cloud' shelter structure; the ornamental, the 'Byzantine' Indian Elephant Temple; and the heavily massed, over-scaled former bull elephant barn – all in a relatively small area.
- Given their proposed close proximity, the visual relationship between the 'D-shaped' aviary remnants and the new RACC building will need careful reconciliation in order to make this juxtaposition a successful one. That between the aviary remnants and the recent 'cloud' shelter structure treatment could be seen as an example of an arguably successful connexion between the two elements.

6.1.2 Impact on Significant Layout

Path Network

An important positive heritage outcome of the new RACC development is that it would involve no substantial change to the early upper and lower access roads either side of the development. Access points to the new building would involve marrying floor levels to existing road levels at the ground floor (below) and Level 2 (above) entries while the access point to Level 1 would be from the long, largely on-grade, pathway extending from the east that is proposed to connect to the descending part of the upper access road under the *Waterhousea* avenue. An implication would be that the distinctive kinked elongated shape of the study area (culminating at the eastern apex) would also be retained providing a continuous, recognisable link from the earliest site planning (eg **Figures 5** and **7**) to the present (about 110 years).

A further positive heritage outcome would be the proposed retention of the stepped path access forming the site's western boundary. This early access was truncated with the late 1970s Seal Show development where the upper section remains but the lower section was removed (**Figure 38**). It traditionally formed a convenient public site access linking the intact early flights of steps adjacent (s170 items 25L and 56L) and was closed to the public for security and operational reasons with the development of the current Gorilla precinct. While its retention is positive, its continued closure to the public would be regarded as a neutral heritage outcome. An implication of this is that, where future zoo site planning permits, it would be highly desirable to reinstate missing parts of this pathway and reactivate it as a public access way – particularly to link with the currently operational and intact early steps nearby (Items 25L and 56L).

Layout of Aviary Remnants

The most culturally significant introduced structures within the study site are the 'D-shaped' aviaries from 1915. These remnants are now only represented by the outer walls that define the former aviary layout. It is this distinctive layout after which the aviaries are now generally named (rather than after the various types of birds that were formerly housed within them). The RACC proposal requires that a long path access is provided to link with Level 1 (the middle level) of the new building. A consequence of this is that the pathway needs to pass through both remnant 'D-shaped' aviaries. One design option would be to elevate it as a ramp so it passes over the low remnant walls and leaves them fully intact. However, this would then cause the ramp to appear unnecessarily prominent and, ultimately, visually intrusive within this finer scaled environment. The option currently proposed has an on-grade pathway and, in order to pass through the aviary structures, requires small sections, or bays, of the aviary walls to be removed. The detailed design of the path and how it engages with the aviary remnants would be key factors in how successfully this option could be accomplished.

Later Path Layout

Between and around the aviaries there is an access arrangement (1920s-1940s period initially) that has been more recently upgraded to meet BCA requirements. This convenient access system comprises a flight of steps off the lower road between the aviary remnants and leads to two further flights of steps up to the upper access road that, in turn, leads to the floral clock area, 'Blue Mountains bushwalk' and the 'Forest adventure'. The lower flight of steps provides direct access to the small picnic/rest area within the smaller 'D-shaped' aviary. While sound urban planning principles would suggest it is desirable that all of these diverse access options should be retained, the current approach to zoological exhibit planning advocates a more 'choreographed' (or channeled) system of public access with only single entry and exit points. The proposed RACC layout arrangement reflects this approach such that the lower steps are proposed for removal and the others are to be retained but discontinued as access options and subsumed into the overall landscape, as are the paths around the aviary walls.

6.1.3 Impact on Significant Fabric

The following potential impacts have been identified in relation to significant fabric:-

'D-shaped' Aviaries (s170 Item 19B)

As mentioned above in **Section 6.1.2** regarding layout, access to Level 1 of the proposed RACC building requires a long pathway from the eastern side. In order to ensure the proposed new structures remain visually subordinate and appear to fit the existing landscape setting in a compelling way, small bays would need to be removed from the aviaries that may weaken the definition of their layout. This trade-off is seen as a more preferable approach than retaining all of the remaining walls intact but with the consequence of a more elevated, visually intrusive ramp structure dominating and obscuring the former aviary setting (and walls).

The current RACC proposal shows the eastern pathway breaching the western wall of the larger aviary structure at a point where the aviary wall has been carefully built over a natural sandstone outcrop (**Figure 43**). This represents a special (if not unique) connexion between the 1915 structure and the outcrop. It indicates a deliberate intention on the part of the original architect and builders to retain the natural outcropping as a feature of the zoo enclosures so it would be highly desirable to avoid this important junction. At this stage, the proposal (**Figures 45, 46 and 60**) is to remove the rock outcrop by salvage and reuse it elsewhere within the site while also removing the panel of aviary walling between piers at this point.

The 2010s picnic/shelter intervention within the small aviary space is not listed on the s170 register and would be regarded as having only some heritage significance, yet it is a delightful and respectful intervention within the zoo and makes a positive and playful contribution to the place. It could also be regarded as a subtle way of interpreting the former aviary superstructure while offering a practical shelter in an otherwise 'empty' part of the zoo. The new RACC development proposes the retention of these recent interventions within the small aviary layout and this would be a positive heritage outcome.

Western pathway & balustrading (s170 Items 99L and 130L)

Defining the western edge of the study area is the remnant stepped pathway that formerly provided a convenient link between the early formal steps above the upper road (s170 Item 56L) and those below the lower road (s170 Item 25L). As noted previously, the stepped pathway is part of Item 99L on the s170 register with the remnant metal balustrading associated with the path access noted as Item 130L. This balustrading – consisting of large diameter metal posts with flat-domed caps – is still mostly intact. For current security and operational reasons the path needs to remain closed to public access.

It is not known if the path surfaces are original or early, if so these would be considered of high local significance. (At least the *alignment* of the remnant path appears intact and that is certainly of high significance as part of the early zoo circulation system.)

Site vegetation (s170 Items 163L, 201L, 202L, 258L and others not listed)

The current proposal allows for the retention of all of the existing site vegetation to the east of the larger 'D-shaped' aviary that includes the *Waterhousea* avenue (Item 163L), the mixed 1990s *Camellia* plantings (Item 258L) throughout the avenue as well as two of the three mature Cabbage Palm (*Livistona australis*) (Item 202L) plantings along the lower road. The western-most of these centenarian palms is within the current temporary Meerkat enclosure which is designated for demolition while the palm is proposed to be relocated elsewhere within the site.

Most of the vegetation currently within the proposed main building footprint is very recent (after 2009) and not considered significant from a cultural heritage perspective. However, some of this vegetation includes old palm species (that certainly are culturally significant) as well as groups of young palm plantings, cycads and Gynura Lilies that could be salvaged by transplanting /relocation elsewhere within the zoo. Also just past the western wall of the larger 'D-shaped' aviary is an unusual African strangling fig tree species (*Ficus craterostoma*) that is both rare in cultivation in Sydney and valuable as part of the zoo's botanic estate. The current location of the eastern end of the proposed new building would preclude retention of the trees. It is proposed that the palms and the two fig trees be salvaged and relocated elsewhere within the site. In relation to the culturally significant site vegetation, all are able to be retained *in situ* or capable of transplanting elsewhere within the site. This is a positive heritage outcome. The reuse of all of this relocatable vegetation to spaces flanking the proposed new building would be potentially beneficial in adding to the canopies of the site and reinforcing the landscape setting of the precinct.

Rock outcropping (s170 Item 75L)

One of the outstanding natural characteristics of the Taronga Zoo site is its various exposed Hawkesbury Sandstone outcrops and cliffs. In many cases these were carefully incorporated into animal enclosures since the earliest phases of the zoo – an example being within the larger 'D-shaped' aviary (**Figure 43**). Within the present study site several substantial natural *in situ* rock features are evident mainly within, and to the west, and northwest of the larger 'D-shaped' aviary (**Figure 60**). The current proposed RACC layout means that all of these outcrops would be affected. Rather than building over the outcrops, it is proposed to salvage these larger outcrops and reuse them as part of the site's interpretation. While it is always desirable to retain such features in their natural locations, the proposed salvage and relocation of the outcropping within the site would mitigate an otherwise severe negative heritage outcome to a more neutral heritage outcome.

Rustic Stone Edging (s170 Item 151L)

The 1920s-1940s period rustic stone edging behind the aviaries is proposed to be retained intact. As this landscape element relates to the paths around the aviaries that are proposed to be discontinued as a access, the rustic stone edging would be 'moth-balled' and incorporated within the general landscape treatment proposed for the area. This would represent a neutral heritage outcome.

Existing Temporary Meerkat enclosure

Although the current (temporary) Meerkat (and formerly Fairy Penguin) enclosure is not listed as a significant item it does coincide with an earlier pond shown to the immediate west of the larger 'D-shaped' aviary on the 1916 site plan (**Figure 7**). However, given the degree of subsequent development for later animal enclosures it is considered unlikely that any evidence of substance would remain of the earlier structure. There are also various special thematic plantings within the Meerkat enclosure (apart from the old Cabbage palm noted above) that also appear to be unlisted on the s170 register but probably should be. They include an *Aloe ferox*, *Euphorbia tirucalli* and a *Phoenix* sp. All are capable of being relocated and reused for other zoo enclosures and if this were to be undertaken, it would lead to a further positive heritage outcome for the project.

Other Site Elements (s170 Item 116M)

The Hallstrom memorial relief replica and descriptive plates are currently located on a pier along the upper access road and away from any proposed development associated with the new RACC building. The memorial has already been relocated from the former Hallstrom Square to its present location and is proposed to be relocated again to a more permanent position elsewhere within the zoo to honour the former director. In this context, the proposed relocation to a more appropriate permanent site is considered a positive heritage impact.

6.1.4 Consistency with Assessed Significance

This section considers the proposal from the perspective of the statement of significance (**Section 4.2**). That is, do any of the proposed works have the potential to compromise the assessed significance of Taronga Zoo or individual items of cultural significance? In order to affect the assessed cultural significance of the place the proposed works would need to be clearly in conflict with any of the specific aspects outlined in the statement of significance. For convenience, each relevant paragraph from the statement of significance is repeated below.

Taronga Zoo is a place of national significance as an urban zoo with unique physical and associative attributes, including links with early modern zoo philosophy, a unique and powerful cultural landscape and a wide range of landscape elements, architectural styles and enclosure designs evidencing the development of zoos in Australia.

Within the present study site a number of elements that collectively contribute to an understanding of “early modern zoo philosophy and, as part of the zoo’s “unique and powerful cultural landscape”, also contribute to the “wide range of landscape elements, architectural styles and enclosure designs” that enable Taronga Zoo to demonstrate “the development of zoos in Australia”. Specifically the early zoo components within the site include the pre-zoo rock outcropping; the descending, folded landform (both of which were recognised and exploited in the original zoo planning); the original 1910s access layout; the mid-1910s ‘D-shaped’ aviary remnants; and the early interwar plantings such as the *Waterhousea* avenue and various (now) 100-year old palms.

The proposed new RACC development has the potential to affect some of these elements and this is further explored in the next paragraph and discussion.

Features that contribute to Taronga’s cultural landscape include the steeply sloping topography of the site; its location on the northern foreshore of Sydney harbour; the exploitation of the natural stone landforms and complimentary faux rock formations; the circulation layout and associated staircase and seating; the exotic and grand built elements used for public buildings and animal enclosures; the native and introduced vegetation on the site, the internal visual corridors within the site and expansive views from the site across Sydney Harbour to the city skyline.

Owing to the compact form of the proposed three-storey RACC building, the intrinsic sloping topographic character of the site will be masked where the slope is steepest. This will have the effect of obscuring an appreciation of the site’s natural landform including an understanding that the distinctive ‘fold’ at the western end of the site is part of the Taronga Zoo’s original main drainage line. This appears to be the only potentially negative outcome that is difficult to mitigate against. In order to achieve the required floor area, the only other option would be to ‘slide’ the entire building across to the east with the implication that the larger of the ‘D-shaped’ aviaries would be seriously impacted. A trade-off for the natural landform issue is that almost all existing elements from the larger ‘D-shaped’ aviary onwards to the east would be retained largely intact. These include most of the aviary remnants, all of the *Waterhousea* avenue and most existing plantings (all significant ones) to the east.

Other potentially positive heritage outcomes as a result of the three-storey planning of the building would be that distant views across Sydney Harbour would be recovered – at least from the upper level. With the proposed relocation of other plantings of significance, there would likely be no negative heritage outcomes for the site’s culturally significant vegetation.

The statement of significance specifically mentions Taronga Zoo’s characteristic natural rock outcropping of which there are several outstanding examples identified within the site (**Figure 60**). Various components of the proposed new RACC building would impact these outcrops so the intention is to salvage each and relocate them elsewhere on the site. The loss of these outcrops would be a severe negative heritage outcome while retaining the outcrops intact would be a positive one. By salvaging and relocating the outcrops the result would be a neutral heritage outcome.

The original fabric at Taronga demonstrates the earliest example in Australia of Carl Hagenbeck’s and early twentieth-century European zoological philosophies. In the differing design and approaches to the animal enclosures and aviaries, Taronga also evidences key aspects of international zoological [planning] philosophy that have influenced the Zoo’s development throughout the twentieth century.

The original and early fabric and layout is where the influence of Carl Hagenbeck is embodied at Taronga Zoo. Any impact on this aspect of significance would entail the loss or obscuring of such evidence which in the case of the present site includes its enveloping access system, the 'D-shaped' aviaries, the *Waterhousea* avenue and the oldest palms. None of these elements are proposed to be removed and apart from the limited loss of several aviary wall panels, all of these elements are proposed to be retained.

With the substantial retention of the original and early zoo structures and landscape elements, there is an opportunity for more focussed interpretation where evolving approaches to best-practice zoological planning and design could be exploited such as the progression from the earliest aviary designs ('D-shaped' aviaries) to the more recent walk-through, 'full immersive' type aviary designs (highlighted by the nearby Australian Rainforest aviary and the large Blue Mountains Bushwalk aviary and enclosure).

As an educational, entertainment and recreational facility, Taronga is a highly revered institution within Sydney's social fabric, evoking memories across generations of visitors. The Zoo is also an important keystone in distinguishing Sydney's sense of place. For the zoological community, Taronga is internationally recognised as a leading centre of biodiversity conservation and for the Zoo's educational focus.

Without comprehensive evidence of social values, it is unpredictable as to how communities would react to new developments within the site so there may be both positive and negative reactions (with implications on the social values of the place) to the RACC proposal. This is especially so where there are sudden, dramatic changes to familiar landmarks and challenges to collective place memory within a highly esteemed public place such as Taronga Zoo. However, that virtually all culturally significant site elements are able to be retained *in situ* or salvaged and relocated within the site or retained with only minor modifications, means that a generally positive heritage outcome could be demonstrated.

Taronga's archaeological resource has some potential to provide information about the Aboriginal community, the early use of the site as a quarantine station and the development of the zoo. In combination, the extensive archive collection, built structures, landscape features and archaeological features at Taronga have great potential for research and community education.

This aspect of significance is covered in more detail in a separate archaeological report relevant to the proposed RACC development.

6.1.5 Reconciliation with Taronga Zoo s170 Register Obligations (Heritage Act, 1977)

Within the proposed Reptile and Amphibian Conservation Centre development area there are 12 items listed on the Taronga Zoo s170 Register including the overall zoo site (Item 82A). (One item – 269L *Vitex lucens* – has died and already been removed from the site although the s170 register is yet to be adjusted accordingly.) A further 7 listed items are to be found in the vicinity of the proposed site area. In addition to these listed items there are a further 5 items (vegetation) identified within the site that are culturally significant but hitherto remain unlisted.

On its website under 'Heritage Registers', the Office of Environment and Heritage indicates that each government agency has an obligation to **conserve** and appropriately manage its s170-listed assets on behalf of the community.²² Many items listed on s170 registers are of local heritage significance (as is the case with those for Taronga Zoo).

Of the listed heritage items within the site area, the following account is given in relation to the RACC proposal and summarised in **Table 6.2**:-

²² Bold italics added.

- * 'D-shaped' aviaries (Item 19B)(Local/High significance) – retained though to be modified with some wall panels removed to allow an on-grade path access through the spaces;
- * Natural stone features (Item 75L)(Local/High significance) – several large outcrops are proposed to be salvaged and relocated within the site;
- * Original (1910s) paths (Part 99L)(State/Exceptional significance) – upper and lower access road alignments would be retained intact with the western stepped path retained intact though only for authorised access (relating to the Gorilla enclosure) at this stage;
- * Hallstrom Memorial Plate (replica)(Item 116M)(Local/Moderate significance) – Plates and plinth are to be moved to a more appropriate location within the zoo (having been located to the current position in 2019 for the recent redevelopment of the former Hallstrom Square);
- * Original 1910s steel pipe fence (130L)(Local/Exceptional significance) – retained intact in association with the western stepped path;
- * Rustic stone retaining walls (151L)(Local/Moderate significance) – all proposed to be retained intact but 'moth-balled' within a non-accessible area;
- * Weeping Satinash avenue (*Waterhousea floribunda* (syn. *Syzygium floribunda*))(163L) – all proposed to be retained intact. Care and monitoring would be required where root zones may be affected by excavation (such as footings for an eastern RACC entry portal structure);
- * Piccabeen palm (*Archontophoenix cunninghamiana*)(Item 201L)(Local/High significance) – not located where s170 register describes it, but further to the west (along with an unlisted old Kentia Palm (*Howea forsteriana*) next to it). Both palms to be salvaged and relocated on site;
- * Three Cabbage Palms (*Livistona australis*)(Item 202L) – eastern-most palms unaffected by the proposal while the western palm (currently within the Meerkat enclosure) is proposed to be salvaged and relocated elsewhere within the site;
- * 1990s *Camellia* group (Item 258L) – most appear to be unaffected by the proposal and could be retained intact (though where there is any possible future conflict, individual plants could be transplanted nearby); and
- * Individual Puriri (*Vitex lucens*)(269L) – this plant has died and already been removed.

Potential heritage impact for items in the vicinity of the development is summarised in **Table 6.3** where generally little impact is expected apart from winter shading of the ponds and island to the south (Item 118L). Additionally, for the landscape items not listed on the s170 register but are regarded as having cultural significance, the following comments are given:-

- * *Ficus craterostoma* (two plants) – certainly of high significance at least and potentially at a State level - to the west of the large aviary remnant are proposed to be salvaged and relocated to the northwest corner of the site;
- * A currently unlisted old Kentia Palm (*Howea forsteriana*) - probably of high significance at a Local level – along the upper access road is proposed to be salvaged and relocated within the site;
- * An unlisted old Piccabeen palm (*Archontophoenix cunninghamiana*) near the eastern end of the largest rock outcrop - probably of high significance at a Local level – is proposed to be salvaged and relocated within the site;

* A group of younger Cabbage Palms (*Livistona australis*) also below the largest rock outcrop - probably of some significance at a Local level – all would need to be removed but could be salvaged by relocating elsewhere such as within the larger 'D-shaped' aviary space; and

* Various thematic plantings within the Meerkat enclosure - probably of some to moderate significance at a Local level – all would need to be removed but could be salvaged by relocating elsewhere where needed within the zoo.

The proposed works entail the relocation of some items (rock outcrops, palms and plants within the Meerkat enclosure), modifications to the original form of some items (aviaries) and changes to the setting of other, or the same, items. The Heritage Division of the OEH has provided a helpful table of pertinent questions to be asked with respect to each of these proposed actions affecting s170 listed items of cultural significance. Guiding questions have been selected for their direct relevance to the RACC project and include:-

Minor partial demolition (such as the various wall panels of the aviary remnants)

- *Is the demolition essential for the heritage item to function?*
- *Are important features of the item affected by the demolition?*
- *Is the resolution to partially demolish sympathetic to the heritage significance of the item?*
- *If the partial demolition is a result of the condition of the fabric, is it certain that the fabric cannot be repaired?*

Major additions (such as the new eastern pathway through the aviaries)

- *How is the impact of the addition on the heritage significance of the item to be minimised?*
- *Can the additional area be located within an existing structure? If not, why not?*
- *Will the additions tend to visually dominate the heritage item?*
- *Are the additions sited on any known, or potentially significant archaeological deposits? If so, have alternative positions for the additions been considered?*
- *Are the additions sympathetic to the heritage item? In what way (e.g. form, proportions, materials, design)?*

New development adjacent to a heritage item (new RACC building next to the aviaries)

- *How is the impact of the new development on the heritage significance of the item or area to be minimised?*
- *Why is the new development required to be adjacent to a heritage item?*
- *How does the curtilage allowed around the heritage item contribute to the retention of its heritage significance?*
- *How does the new development affect views to, and from, the heritage item? What has been done to minimize negative effects?*
- *Is the development sited on any known, or potentially significant archaeological deposits? If so, have alternative sites been considered? Why were they rejected?*
- *Is the new development sympathetic to the heritage item? In what way (e.g. form, siting, materials, proportions, design)?*
- *Will the additions visually dominate the heritage item? How has this been minimised?*
- *Will the public, and users of the item, still be able to view and appreciate its significance?*

New landscape works and features

- *How has the impact of the new work on the heritage significance of the existing landscape been minimised?*
- *Has evidence (archival and physical) of previous landscape work been investigated? Are previous works being reinstated?*
- *Has the advice of a consultant skilled in the conservation of heritage landscapes been sought? If so, have*

their recommendations been implemented?

- *Are any known or potential archaeological deposits affected by the landscape works? If so, what alternatives have been considered?*
- *How does the work impact on views to, and from, adjacent heritage items?*

There are also various significant views relating to the study site and listed in the Landscape Management Plan (2006), however most of these are now obscured by vegetation. Of the currently obscured views from the upper access road, the upper level of the new building would enable these views to be recovered - a positive heritage outcome. Some of the significant listed traditional view opportunities relate to the Serpentine path and Helmore lawns from which the new RACC building would be visible. The views noted in the LMP are set out at **Appendix D** and a review summary in relation to the RACC proposal is provided at **Table 6.4**.

6.1.6 Consistency with the Taronga Zoo Heritage Asset Management Strategy 2006

In 2006 the Capital Works & Infrastructure Division of the zoo prepared a brief strategy for the management of its heritage assets (HAMS) on behalf of the then Zoological Parks Board (ZPB) of NSW (now Taronga Conservation Society Australia). The strategy states that the "ZPB's commitment to cultural heritage is embodied in its endorsed Conservation Strategy (CS)(2002) and Archaeological Management Plan (AMP) (2004)". The following principles for the ongoing management of its heritage assets reflect the key conservation policies identified in these documents:

- (i) ZPB recognises Taronga Zoo as a significant place for the State of NSW and will endeavour to ensure the management of its heritage items is reflective of community values and aspirations for its heritage.
- (ii) The Zoo is to be conserved and adapted in accordance with the best practice heritage management principles outlined in the Australia ICOMOS Burra Charter.
- (iii) The responsibility for the management of the ZPB heritage assets resides with the General Manager of Capital Works & Infrastructure (CWI) division. The Project Manager, Heritage Specialist, will provide specialist input, and build the heritage management capacity within the CWI Division to account for these responsibilities.
- (iv) The retention, conservation and adaptation of items of Exceptional, High and Some significance will be facilitated.
- (v) The preparation of further Management Plans and Heritage Impact Statements will continue to inform future development at the Zoo.
- (vi) The ZPB will actively seek compatible re-use options for the adaptation of items no longer suitable for the original designed use.
- (vii) The CWI Division will be responsible for maintaining those items on the Section 170 Heritage and Conservation Register in accordance with the Minimum Standards of Maintenance and Repair.
- (viii) Heritage asset maintenance requirements will be integrated into the refinement of the Computerised Maintenance Management Strategy (CMMS).
- (ix) Procedures for maintenance works will be updated to incorporate conservation principles.
- (x) The conservation of the heritage assets will be adequately resourced.

(xi) Where specialist skills or trades, beyond the capacity of the CWI Division, are required, appropriate consultants will be engaged.

(xii) Archaeological resources will be managed in accordance with the endorsed AMP.

(xiii) Maintenance records of significant items will be recorded in the CMMS.

The TZ HAMS goes on to state that: "Taronga Zoo has been assessed as a place of State significance. To date neither the site as a whole, or any of its individual elements, have been identified on the State Heritage Register". A specific action was suggested in the Strategy to nominate Taronga Zoo and any State-assessed items on the s170 register for consideration on the State Heritage Register by December 2009. Further, to date, neither the zoo nor any of its individual State-assessed assets are included on the SHR.

Of further relevance to the present proposal, are the Strategy's recommended management actions for the reuse of the former aviaries (Principle (vi)). At this stage the RACC development proposal indicates the use of the smaller remnant aviary to remain as a rest area and exhibit entry while the larger of the two remnant aviaries is to be used solely as a means of access to Level 1 of the new building.

6.1.7 Consistency with the Taronga Zoo Landscape Management Plan 2006

The 2006 LMP represents the most comprehensive document to date dealing with the detailed landscape elements within Taronga Zoo. Apart from recording its many features and assessing their relative significance, condition and integrity, the LMP provided various policies to guide future development at the zoo. While having regard to the zoo as a whole, there are many policies that are pertinent to the present RACC study area. These include:-

** (Policy 2.1.5) The layout, structure, cultural plantings and built landscape elements surviving from Le Souef's original landscape design for the place should be retained, conserved, respected, managed and maintained so that the character of the early zoo landscape is not lost or overwhelmed by new development.*

In the case of the RACC site, examples of Le Souef-era development include the road/path layout, the 'D-shaped' aviaries, the Satinash avenue and the older palms. Further policies below also relate to these site attributes.

** (Policy 2.1.8) The zoo landscape should continue to evolve and adapt to suit changing zoological management philosophies and practices in order to maintain the zoo's world class standing. However, all changes should respect and accommodate the significant aspects and elements of the existing landscape as identified in this report [ie. the LMP report].*

** (Policy 2.1.9) In particular, the historic and aesthetic character of the areas identified as significant in fig 5.8 should be conserved and respected in the design of new site developments (including new exhibits, precincts and/or facilities) within or adjacent to those areas.*

** (Policy 2.1.11) The original path layout should be conserved and respected. New paths may be introduced, but should be sinuous in form and should continue to respect the natural topography of the site.*

** (Policy 2.1.12) The natural rock outcrops occurring across the site should be retained and respected, and may continue to be integrated into the design of new exhibits and the general landscaping of the zoo. ... The surviving early sandstone walling (both ashlar and rustic walling)*

should be retained, conserved and respected and sandstone should continue to be used as a building material for landscape walling within the site.

** (Policy 2.1.13) Both the cultural plantings and indigenous vegetation communities of the zoo should be conserved, managed and maintained as important components of the zoo landscape.*

** (Policy 2.1.15) The existing views out from the zoo site across Sydney Harbour should be retained, respected and managed to enhance the zoo's sense of place on the edge of Sydney Harbour. Views of the harbour should continue to be exploited in the development of new areas within the zoo site, maintaining the contextual relationship between the zoo and the harbour.*

** (Policy 2.5.1) Significant built landscape elements should be conserved in accordance with their significance gradings and the following policies:*

Elements graded Exceptional:

Retain and conserve all elements of exceptional significance in their existing configuration. Removal or demolition of these elements is not permitted.

Retain and conserve the significant qualities of the setting and context of these elements. Changes or alterations to these elements are not encouraged, but if found to be necessary, should be minimal and should only be permitted where the changes will support and strengthen the significance of the elements. The elements should not be obscured nor their significance diminished. The integrity of the elements should be retained and respected. All changes, alterations or repairs must retain and respect as much as possible of the original fabric, detail and significant qualities of the element. These elements should be entered on the Section 170 register for Taronga Zoo.

In the case of the RACC site, the only attribute currently noted as having exceptional cultural significance is the road/path layout that defines the periphery of the proposed development.

Elements graded High:

Retention and conservation of all elements of high significance in situ is preferable to their relocation. Demolition and removal of these elements is not permitted. Retain and conserve the significant qualities of the setting and context of these elements. Changes or alterations to these elements may be permitted provided the changes support and strengthen the significance of the elements. The integrity of the original fabric and the original design intent should be respected and if possible strengthened. These elements should be entered on the Section 170 register for Taronga Zoo.

** (Policy 2.5.3) Significant fabric from all periods of the place must be respected, with evidence of all phases of the history and use of the place kept in situ in accordance with the policies in this document.*

** (Policy 2.5.5) Where intervention of significant fabric for non-conservation purposes is unavoidable, the loss of cultural significance should be minimised. Within these areas, fabric of a lower relative significance should be disturbed in preference to fabric with a higher relative value.*

It can be demonstrated that the RACC proposal generally respects the policies of the LMP.

6.1.8 Consistency with the Mosman Local Environmental Plan 2012

Relevant sections of the Mosman LEP 2012 with respect to heritage considerations at Taronga Zoo are Part 5.9 Preservation of Trees or Vegetation and Part 5.10 Heritage Conservation (**Table 6.1**) each of which is now considered below.

In relation to Part 5.9, vegetation is proposed to be removed as part of the development of the new RACC site. All of the more recent vegetation (since 2009) would need to be removed. The same area (including the Meerkat enclosure) would involve removing various palms and other plants ranging from high to some cultural significance. Those plantings that are capable of being transplanted are proposed to be salvaged and relocated within the site. These include all older palms of high significance as well as the two fig trees. Aspects of Part 5.10 of the LEP are considered in the following table.

Table 6.1 MOSMAN LEP 2012 PART 5.10 HERITAGE CONSERVATION	
	RECONCILIATION AGAINST THE PROPOSAL
<p>(1) <i>The objectives of this clause are as follows:</i></p> <p>(a) <i>to conserve the environmental heritage of Mosman,</i></p> <p>(b) <i>to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,</i></p> <p>(c) <i>to conserve archaeological sites,</i></p> <p>(d) <i>to conserve Aboriginal objects and Aboriginal places of heritage significance.</i></p>	<p>All of the subclauses here have at least some relevance to this proposal. Items identified in this report as having cultural significance are examples of Mosman's environmental heritage and should therefore be conserved according to this clause.</p>
<p>(2) <i>Requirement for consent</i></p> <p><i>Development consent is required for any of the following:</i></p> <p>(a) <i>demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):</i></p> <p style="padding-left: 40px;">(i) <i>a heritage item,</i></p> <p style="padding-left: 40px;">(ii) <i>an Aboriginal object,</i></p> <p style="padding-left: 40px;">(iii) <i>a building, work, relic or tree within a heritage conservation area,</i></p> <p>(b) <i>altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,</i></p> <p>(c) <i>disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,</i></p> <p>(d) <i>disturbing or excavating an Aboriginal place of heritage significance,</i></p>	<p>The proposal is included within the area listed as a heritage item under the MLEP 2012 – see Appendix A – and therefore requires comment from Mosman Council.</p>

<p>(e) erecting a building on land: (i) on which a heritage item is located or that is within a heritage conservation area, or (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.</p>	
<p>(3) When consent not required However, development consent under this clause is not required if:</p> <p>(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development:</p> <p>(i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and (ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or</p>	<p>While the RACC development is classified as a 'State Significant Development' the comment of relevant stakeholders is still required. One such stakeholder is Mosman Council.</p>
<p>(4) Effect of proposed development on heritage significance</p> <p>The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).</p>	<p>This HIA report provides a basis for considering the context of the proposal and enables informed decisions.</p>
<p>(5) Heritage assessment The consent authority may, before granting consent to any development:</p> <p>(a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of</p>	<p>This HIA report provides a basis for assessing the extent to which the proposal would affect the site.</p>

<p>the heritage item or heritage conservation area concerned.</p>	
<p>(6) <i>Heritage conservation management plans</i> The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.</p>	<p>There have been various heritage studies undertaken of Taronga Zoo that include various components of the proposed RACC development. These include the 2002 Conservation Strategy (GML), Archaeological Management Plan 2004 (GML) and the Landscape Management Plan 2006 (Design 5) all of which combined would provide a sound basis with which to consider the proposals.</p>
<p>(7) <i>Archaeological sites</i> The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the Heritage Act 1977 applies):</p> <p>(a) notify the Heritage Council of its intention to grant consent, and (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.</p>	<p>Refer to the Archaeological Management Plan 2004 (GML) and Archaeological report by Urbis 2021.</p>
<p>(8) <i>Aboriginal places of heritage significance</i> The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:</p> <p>(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and (b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.</p>	<p>Refer to the Archaeological Management Plan 2004 (GML) and Archaeological report by Urbis 2021.</p>
<p>(9) <i>Demolition of nominated State heritage items</i> The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item:</p> <p>(a) notify the Heritage Council about the application, and (b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.</p>	<p>Although no items of State heritage value are proposed to be demolished or relocated, the Heritage Council of NSW should still be notified as an interested stakeholder of the overall zoo (which, as a collective site, is regarded as having State heritage value to the present and future communities).</p>

Table 6.1 Reconciliation of the proposed RACC development against Section 5.10 of the Mosman Local Environmental Plan, 2012

The following tables (**Tables 6.2 to 6.4**) summarise potential heritage impacts likely to arise from the RACC proposal.

Table 6.2 ITEM/Significance	Existing Policy Status	Proposal	Likely Heritage Impacts
<i>19B 'D-shaped' Aviaries (perimeter walls) Local/High</i>	Conserve & interpret	Retention/reuse	Loss of some fabric
<i>75L Natural Stone Features Local/High</i>	As elements of the pre-European landscape all should be conserved	Largest outcrops relocated as site features	Neutral heritage impact
<i>82A Taronga Zoo State/NA</i>	State level listed site that should be managed to conserve key assets	Refer to details	Would result in a small area of the zoo site being modified with the introduction of a new 3-storey building
<i>99L Original & Early Paths State/Exceptional</i>	State level listed feature that should be conserved	Full retention	Positive outcome for the upper & lower roads though a neutral impact for the western path while no longer accessible to the public
<i>116M Hallstrom Memorial Tablet replica (Formerly located at the area known as Hallstrom Square) Local/Moderate</i>	Conserve	Relocation to more appropriate and permanent site	A positive heritage outcome
<i>130L Steel pipe fence Local/High</i>	Conserve	Retention	Positive heritage outcome
<i>151L Rustic stone garden walls Local/Moderate</i>	Conserve	Retention	Positive as far as retention is concerned though effectively 'moth-balled' (neutral)
<i>163L Waterhousea floribunda avenue Local/High</i>	Conserve & replace if lost	Retention	Positive heritage outcome (little impact – monitor any future excavation within root zone)
<i>201L Piccabeen (Archont. cunninghamiana) Local/High</i>	High significance at a local level – conservation required	Relocation	Positive where retained and relocated within the site

202L Three palms (<i>Livistona australis</i>) Local/High	Conserve & replace if lost	Retention for two + relocation of one (in Meerkat area)	Positive where 3 rd palm is retained and relocated within the site
258L <i>Camellia</i> group Local/Moderate-High (Uncommon cv.)	Conserve & replace if lost	Retention	No impact
269L Puriri (<i>Vitex lucens</i>) N/A	N/A	Gone	Tree died & already removed

Table 6.2 Summary of Heritage Impacts on Significant Items within the RACC site

Table 6.3 ITEM/Significance	Existing Policy Status	Proposal	Likely Heritage Impacts
12B Fmr Upper Seal Pools (now play area) Local/High	Area already highly modified	Outside contract area	None
13B Floral Clock site State & Local/High Exceptional (Clock only)	Conserve	Outside contract area	None
21B Indian Elephant Temple State/Exceptional	Conserve	Outside contract area	Minimal
117B Elliptical aviary (Formerly parrot aviary then repurposed for other animals before being subsumed into 1996 Gorilla area)	Area already highly modified	Outside contract area	None
118L Ponds/islands (Formerly for Gibbons, now Tamarin) Local/High	Conserve	Outside contract area	Likely shaded throughout winter months by new RACC building
195L Relocated palms (from Gorilla redevelopment) Local/High	Conserve	Outside contract area	None
196L Relocated palms (from former Penguin pond)	Conserve	Outside contract area	None

Table 6.3 Summary of Heritage Impacts on Significant Items in the Vicinity of the RACC site

Table 6.4 VIEWS from 2006 LMP	Existing Policy Implication	Proposal	Likely Heritage Impacts
<i>LMP 2006 Views 14/44 from the Serpentine path and Helmore lawn area</i>	Retain	Retained	New RACC building is likely to be highly visible
<i>LMP 2006 View 28 Glimpse</i>	Retain	Harbour glimpse currently reduced or screened by vegetation	New RACC building is likely to be highly visible to the west
<i>LMP 2006 View 30 Glimpse</i>	Retain	Glimpse currently reduced or screened by bull elephant barn	None from RACC development
<i>LMP 2006 View 36/46 Filtered view</i>	Retain	Views currently reduced or screened by vegetation	New RACC building is likely to be visible to the west
<i>LMP 2006 View 49</i>	Retain	Retained	None

Table 6.4 Summary of Heritage Impacts on Significant Views

Table 6.5 Additional Landscape Elements	Assessed Cultural Significance	Proposal	Likely Heritage Impacts
<i>Ficus craterostoma x 2</i>	High/Local (and, possibly, State)	Relocate	Positive where retained & relocated within the site
<i>Old Kentia palm along upper access road</i>	High	Relocate	Positive where retained & relocated within the site
<i>Old Piccabeen palm</i>	High	Relocate	Positive where retained & relocated within the site
<i>Various small plantings in Meerkat enclosure</i>	Moderate to some	Remove	None if relocated
<i>Group of young Cabbage palms</i>	Some	Remove	None if relocated

Table 6.5 Summary of Heritage Impacts on Additional Landscape Elements

6.2 Statement of Heritage Impact

The following aspects of the proposal potentially provide **positive** responses to the Taronga Zoo site by retaining items or areas assessed as having cultural heritage significance:-

- * Substantial retention of existing built and landscape elements in the eastern half of the site including listed s170 Items 151L (Rustic walling), 163L (Satinash avenue), 201L (Piccabeen palm), 202L (Cabbage palms) and 258L (Camellia group);
- * Substantial retention of the 1915 aviary remnants (Item 19B) though with some modifications;
- * Retention of the upper and lower access roads as well as the former western stepped path section that is still intact (Item 99L) along with its associated Edwardian metal balustrading (Item 130L);
- * Intention to salvage and reuse on site various other plantings such as palms (including Items 201L and part 202L) and uncommon fig trees of cultural value;
- * Potential recovery of significant views out to the harbour and beyond from the upper level of the new RACC building; and
- * Potential to recover, transplant and reuse other existing plantings (such as those within the Meerkat enclosure as well as cycads, Gynea Lilies and other species) that need to be removed for the new building.

The following aspects of the proposal have the potential to modify the site in ways that would result in **neutral** impacts on heritage significance:-

- * Salvage and reuse of the more substantial sandstone outcropping (part Item 75L);
- * Continued closure to the public (for security and operational reasons) of the western stepped pathway and its intact balustrading (part Item 99L and Item 130L); and
- * 'Moth-balling' of the rustic stone edging (Item 151L) with the proposed discontinuation of use of the pathways behind the aviaries.

Where there is the potential for **negative** heritage impacts, they appear to be mainly restricted to more subjective issues – an area of notorious unpredictability. The issues relate to the fact that, even with the employment of the best architectural design skill, the proposed RACC complex still involves the introduction of a large building that is also proposed in a location where there has never been a similar scaled building before. While the current schematic proposal goes a long way to mitigating most of these potential impacts, and there is certainly scope to refine this further at the detailed design stage, the following issues are noted:-

- * Potential to register the development as a dramatic and substantial transformation of the hitherto landscape-dominated precinct of the zoo to a dominant urban landscape character;
- * Loss of the ability to readily 'read' or appreciate the intrinsic natural topographic character of the site as a sloping landform featuring a part of the zoo's main creek line; and
- * Potential visibility of the upper level pavilions from Sydney Harbour and beyond.

On balance, and given the size and scale of the proposed RACC building fitted to the study site, the overall heritage outcomes are mostly positive and far outweigh those that are neutral or potentially negative. That virtually all of the listed or assessed fabric and layout of exceptional or

high cultural significance can be retained intact or relocated within the site or retained with only minor modifications is a positive project outcome.

With the prospect of a large building and its various outlying components being constructed in close proximity to so many retained elements of high conservation value, guiding conditions need to be applied at a more detailed level of planning, design and site management. To assist in negotiating this subsequent process and ensure that the positive intentions of the project are realised, the following section outlines various recommendations.

7 Recommendations

To ensure Taronga Zoo's cultural significance is retained, the following recommendations are given on the basis of findings from this report:-

'D-shaped' Aviaries: Conservation Actions

- 1 Where former 'D-shaped' aviary wall panels have been previously removed for earlier development, or are proposed to be removed as part of the current development, ensure the original layout of the wall elements (including walls, engaged piers and gate openings) is recorded in a lasting, distinctive and appropriate way on the ground plane in order to interpret the original, and characteristic, plan of the structures.
- 2 Ensure the design of the proposed entry pathway (and any associated structures) on the eastern side of the new building remains visually subordinate and appears to convincingly 'fit' into its landscape setting.
- 3 Continue ongoing, cyclical conservation works to the remaining fabric of the former 'D-shaped' aviaries – including replacing rusted gate rails/framing and mesh where necessary, stabilising rusting structural components along the walls, repairing/replacing render using the same textured finish and removing opportunistic fig tree seedlings.
- 4 Include as part of an interpretation program, information about this study site area that enables visitors to understand that the remnant 'D-shaped' aviaries were some of the first structures to be built at the zoo and how the aviary remnants were formerly presented (including an apparent design failure that occasioned the later addition of large, unsightly concrete skins (see **Appendix B**) to block southerly winds) while contrasting this with more recent approaches using the larger walkthrough examples nearby.
- 5 Ensure future planting within the larger 'D-shaped' aviary that enables a clear appreciation of its original spatial scale and remnant walling with its detailed textural treatments by, for example, using mainly ground cover species throughout with tall palms as a means of interpreting the former aviary canopy structure.

Architectural Design Issues

- 6 Consider the 'cumulative' effect of any future new entry portal structure at the eastern end of the long pathway in relation to its context where there are already various architectural forms and styles including the former Indian Elephant Temple and the 'cloud' shelter structure within the smaller 'D-shaped' aviary.
- 7 Ensure potential views of the new RACC building – particularly upper level pavilions - from Sydney Harbour are minimised through a careful choice of materials, colours and relative reflectivity of exposed/prominent surfaces.
- 8 Consider including within the building design, provision for deep soil planters to enable the inclusion of spreading canopy trees to soften the outline of the new building and reinforce the canopied context of the broader site setting.

Landscape Issues

- 9 Ensure the peripheral on-grade spaces to the northwest and northeast of the new building are planted out with suitable large canopy trees to assist in integrating the new building into the existing landscape setting.

- 10 Apart from those plantings already intended to be relocated, ensure the careful removal and transplanting of all other palms and plantings readily capable of transplanting (such as cycads, smaller palms, Gynea Lilies as well as those within the Meerkat enclosure) for reuse elsewhere – preferably within the site.

Updating the s170 Register

- 11 Update the Taronga Zoo s170 register to reflect that Item 269L (*Vitex lucens*) has now gone; that Item 163L Weeping Satinash (*Waterhousea floribunda*) is a remnant avenue of 5 trees (with one tree on the eastern side of road near the large walkthrough aviary); to clarify that Item 201L (consisting of two Piccabeen palms and is further west of the Satinash avenue) is relocated; and clarify that Item 202L (Cabbage palms) consists of the two palms at the eastern end of the site with a third old palm currently within the Meerkat enclosure (and to be relocated).
- 12 Update the Taronga Zoo s170 register to include the two African strangling fig trees (*Ficus craterostoma*) (Trees T9 and T10 on the tree survey) and the mature Kentia palm (*Howea forsteriana*) (T16) with notes about their intended relocation.

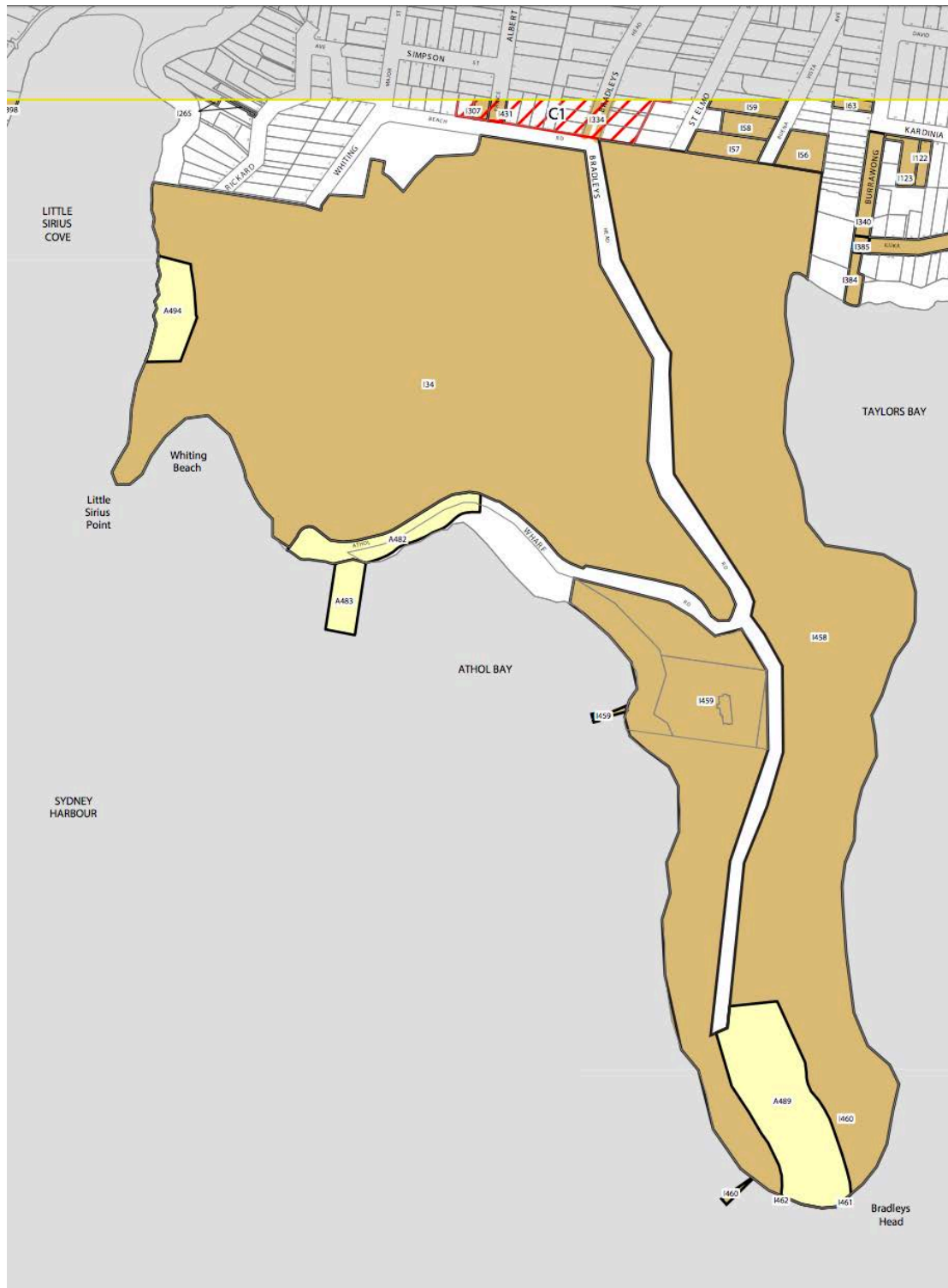
Construction Provisos

- 13 Ensure appropriate protection for all built and landscape elements proposed for retention in proximity to any building works as part of the RACC construction phase.
- 14 Before building works commence on site, ensure appropriate archival recording of the large rock outcrops (Item 75L) proposed for salvage and relocation.
- 15 Ensure qualified arboricultural advice is sought **before** excavating within the canopies/ root zone of the *Waterhousea* avenue for footings or road surface replacement.

Future Zoo Planning

- 16 Where future zoo estate planning and new development allows, consider reinstating missing parts of the pathway and reactivating the western stepped path as part of a public access that links the other retained flights of steps (s170 items 25L and 56L) as originally intended as part of the zoo's convenient circulation system.

Appendix A Map Sheet HER-003 from the Mosman DCP 2012



Extract from Heritage Map Sheet HER-003 from the Mosman LEP 2012 indicating the Taronga Zoo site as heritage item 34 (I34). No Conservation Areas directly relate to the site with the closest -Bradley's Head Road Conservation Area (C1) - immediately to the north. The yellow areas identified on the LEP map relate to historical archaeological sites though none of these would be affected by the proposed development for the new Reptile & Amphibian Conservation Centre. Aboriginal archaeological resources are the subject of separate advice to the TSCA.

Appendix B 'D-shaped' Aviaries Archival Photography



UPPER IMAGE The larger 'D-shaped' aviary in 2002 showing its original canopy intact along with the concrete 'shield' (left, along the lower access road) erected after WWII during the Hallstrom period of the zoo's management. It may have been at this time that the steps between the aviaries and those linking to the upper access road were built as a public access to compensate for the loss of views from the south. (Source: TCSA Archives)



LOWER IMAGE An undated (though pre-2009) photograph along the lower road showing the shielding concrete 'skins' applied to both aviaries – an intervention that may have rectified inherent design faults with the original aviary designs but a dismal result for zoo visitors nevertheless. Note the sandstone rock outcrop in the foreground (right). (Source: TCSA Archives)






UPPER IMAGE View of the aviaries from the lower road in c. 2008. The small structure in the foreground relates to the former penguin enclosure (left). (Source: TCSA Archives)

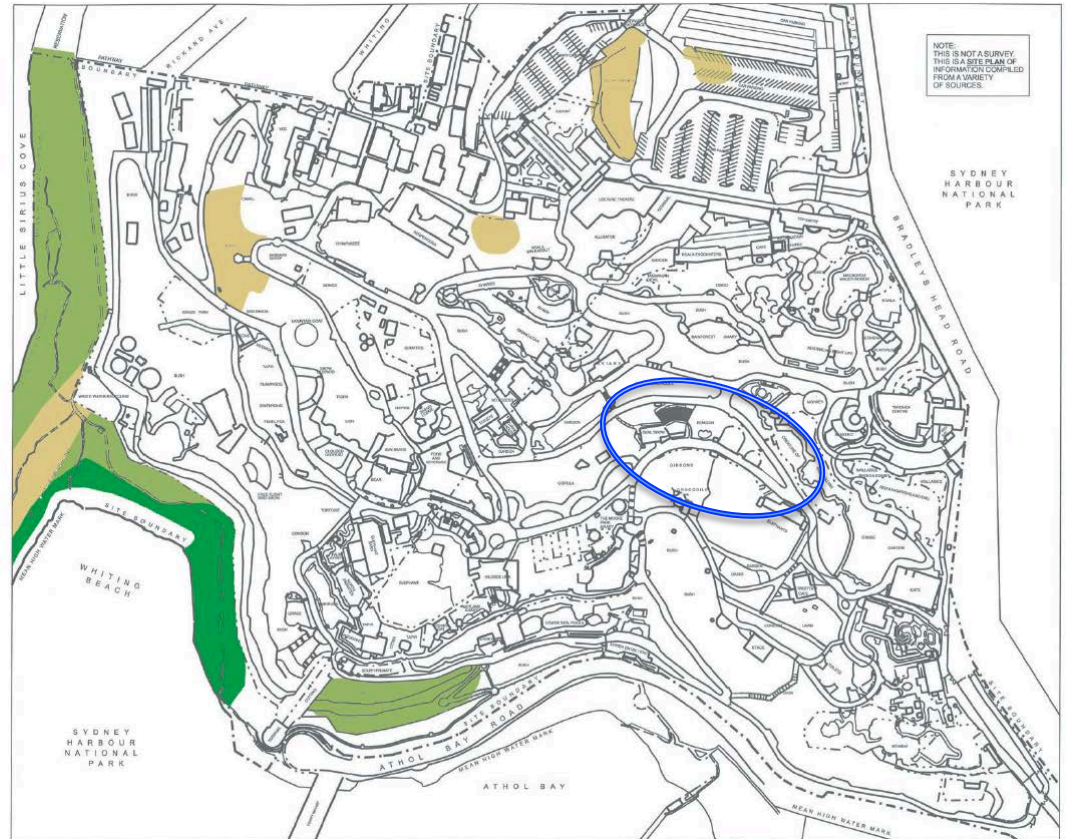


LOWER IMAGE This photograph was taken c. 2012 showing the smaller aviary walling left intact. Note also, at the far end of the aviaries, there is no evidence of the fig tree indicating a relatively recent introduction at the western side of the larger aviary. (Source: TCSA Archives)

Appendix C 2006 Mapping of Remnant Indigenous Vegetation Communities at TZ

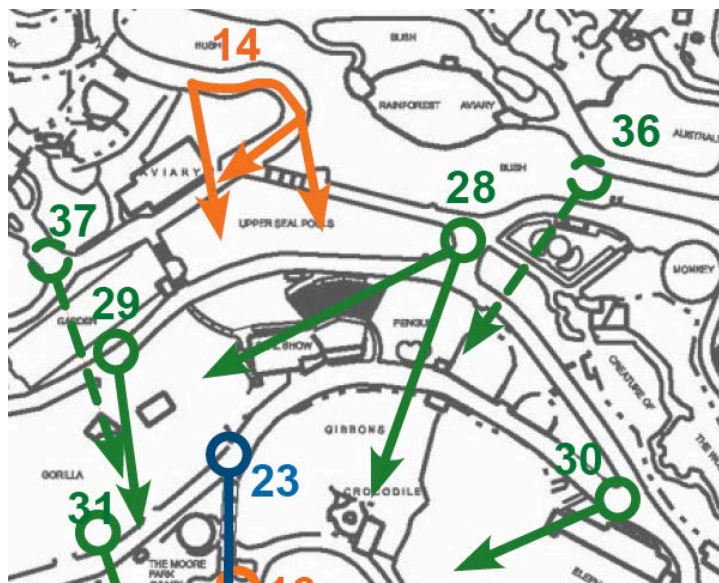
E.1: Significant Remnant Indigenous Vegetation Communities (Dr Ben Wallace)

-  Angophora costata shrubby woodland
-  Euc. botryoides/ Glochidion/ Elaeocarpus open forest
-  Glochidion/Acmena closed forest

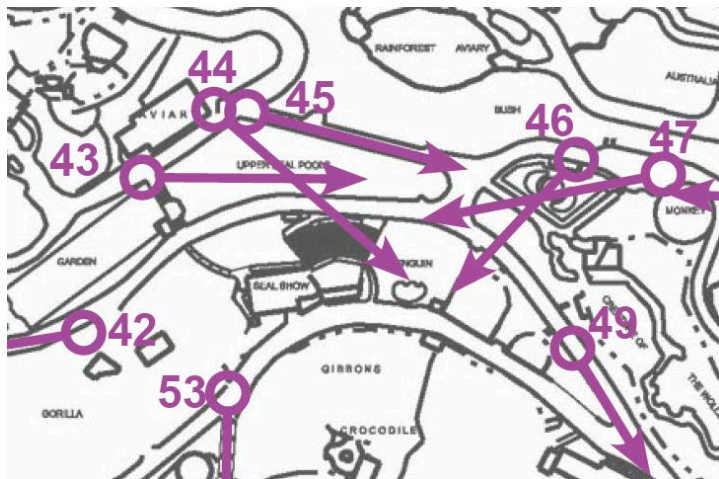


Areas of significant remnant indigenous vegetation within the overall zoo lands. The 1970 PWD master plan (published in *Architecture Australia*, December 1970) indicated that substantial patches of local woodland still remained within the study site at that time. (Courtesy: Design 5 et al LMP, 2006)

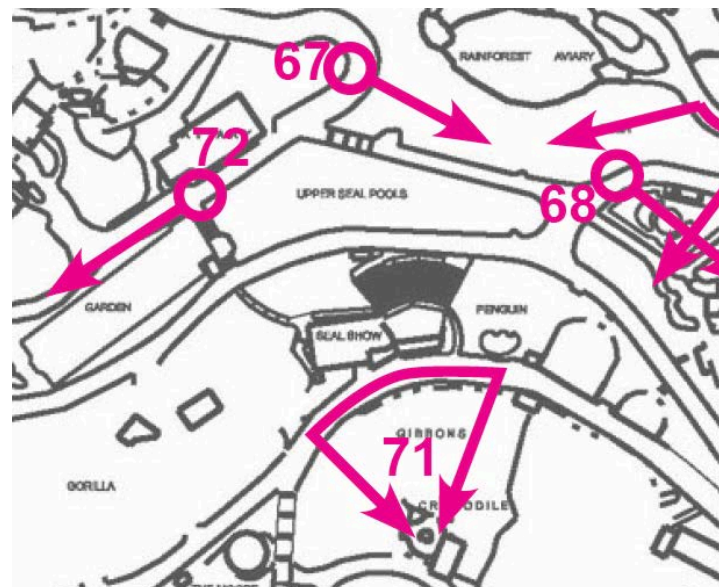
Appendix D Relevant Views from 2006 TZ Landscape Management Plan
 (Courtesy: Design 5 Architects et al)



LEFT TOP Views in the vicinity of the site. NB. The base used for these 2006 views retains earlier site features that have since been demolished (eg Seal Show)



LEFT MIDDLE Internal views



LEFT LOWER Lost views