



Taronga Zoo
Sumatran Tigers
Heritage Impact Assessment
May 2015

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1.0 Introduction

1.1 Preamble

This Heritage Impact Statement (HIS) has been prepared for the CWI Division for the Taronga Conservation Society Australia (TCSA), to accompany approval applications for the expanded Sumatran Tiger exhibit at Taronga Zoo, Mosman. The subject area is to be redeveloped to remove enclosures for species no longer to be exhibited and expand the enclosures for the Sumatran tigers which are endangered and are being successfully bred at Taronga. The proposed works will include the conservation, adaptation and demolition of heritage items within the redevelopment site.

The Taronga Zoo site as a whole has been identified as an item of State heritage significance and a number of items within the zoo have been identified as individual heritage items. The area incorporates built and landscape elements which have been identified as having heritage significance in the Taronga Conservation Society Australia Section 170 Heritage and Conservation Register.

The heritage items in the subject area and heritage items in the vicinity are shown in the following table. The design has been adjusted to as far as possible to avoid impact on the heritage items. Application has already been made to the Heritage Division to remove the items highlighted in red.

Heritage Items within the site

52B	Upper Bear Pits
62B	Cats of Asia
63L	Sandstone Retaining Wall
66A	Aboriginal Hand Stencil
67L	Stone Carvings
68L	Rock Faces
69L	Natural Rock Benches
71L	Broad-leafed paperbarks
85L	Rendered Stone Wall
88L	Rockwork
98B	Pygmy Hippo Enclosure
99L	Original and Early Paths
101B	Snow Leopard, Stone Features
175L	Firewheel Tree
178L	Fig Tree
179L	Small Leaved Fig Tree
242L	Bhutan Cypress
244L	Maple
251L	African Tulip Tree
254L	Bamboo
267L	Climber
268L	Japanese Raisin Tree
283L	Hall's Crabapple

Heritage Items in the vicinity

51L	Sandstone Retaining Wall
61B	Giraffe Houses
70B	Tahr Mountain
73L	Low Retaining Wall
104L	Bird Free Flight Amphitheatre
132L	Rendered masonry wall
180L	Fig Tree
236L	Brush Box
250L	Christmas Bush
255L	Date Palm
256L	Date Palm
273L	Sweet Acacia
277L	Pygmy Date Palm
287L	Aloes
288L	Kalanchoe
289L	Aloes

The history of the Zoo, including the subject area, is documented generally with detailed material available for some areas. Recent planning and redevelopment at the Zoo is another stage in the evolution of approach to the public realm and animal exhibit design at Taronga requiring alteration to some heritage items. This project reflects Taronga's new emphasis on conservation of animals in the wild and in this case there is a direct relationship with Way Kambas National Park in Sumatra. In accordance with the conservation policies of the 2002 Conservation Strategy, an archival photographic record has been made of the subject area and its setting, and items in the vicinity while the animals were still exhibited. This includes the former Snow Leopard enclosure, the Lion and Tiger enclosures and smaller animal enclosures south of the roadway (known as Dog Road) including back of house areas such as dens.

This document evaluates the potential impacts arising from the subject proposal on the heritage values of the individual items in the precinct and in its vicinity, as well as the significance of Taronga Zoo as a whole, in accordance with the conservation policies of the Taronga Zoo Conservation Strategy, July 2002.

This HIS is based upon the design development drawings prepared by LahzNimmo architects dated April 2015 and May 2015 (see later detailed list), enclosure drawings by OFFICIUM dated March 2015 and the vegetation report / landscape drawings prepared by Green and Dale in April 2015.

1.2 Background

Masterplanning

Since the Zoo opened in 1916, the planning of the site has continued to evolve in response to changing zoological philosophies and practices.

From 2000 Taronga Zoo has implemented a redevelopment program for the Zoo based on the Masterplan 2000, which provided guidance on the planning, management and design issues for the upgrading of the site as a whole and established a new vision for Taronga Zoo. A new Masterplan is nearing completion.

Heritage and Conservation Planning

The Taronga Zoo Conservation Strategy, endorsed by the NSW Heritage Office, was prepared to provide a policy framework for conservation, interpretation, management and use of the site as part of the implementation of the endorsed Masterplan 2000.

The Zoological Parks Board (ZPB) Section 170 Heritage and Conservation Register identifies over two hundred and fifty individual built and landscape heritage items within Taronga Zoo, including items within the subject development site, as well as in the vicinity of the proposed development.

The Zoo as a whole is identified in the Mosman Heritage Study as a place of State Significance. The Taronga Zoological Gardens is identified on the 2012 Mosman LEP (item I34) as being of local significance and the listing includes the Rainforest Aviary, the Elephant House, the bus shelter and office, the floral clock and the upper and lower entrance gates. None of the individual heritage items mentioned in the list in Part 1 of Schedule 5 of the Mosman LEP 2012 is affected by or in the vicinity of the proposed development.

There are no items, either within the subject precinct or in the vicinity of the precinct, identified on the Register of Significant Architecture in NSW, which is maintained by the Australian Institute of Architects (AIA). It should be noted that the list is not exhaustive and surveys and additions continue.

Related Approvals

The NSW Heritage Branch has been notified separately of the intention to remove some trees from the s170 register as part of an early works package. The trees are items 179L (fig trees) and 71L (2 of a group of 4 paperbark trees). A separate application has also been made to the Office of Environment and Heritage for an Aboriginal Heritage Impact Permit in relation to works near an Aboriginal site located within the project area.

1.3 Site Location

Taronga Zoo is located on Sydney Harbour's northern foreshore at the head of Athol Bay. The land is under the ownership of the Taronga Conservation Society Australia (TCSA) and is situated within the Municipality of Mosman.

The site is located near to the south western corner of Taronga Zoo (see Figures 1.1 and 1.2).

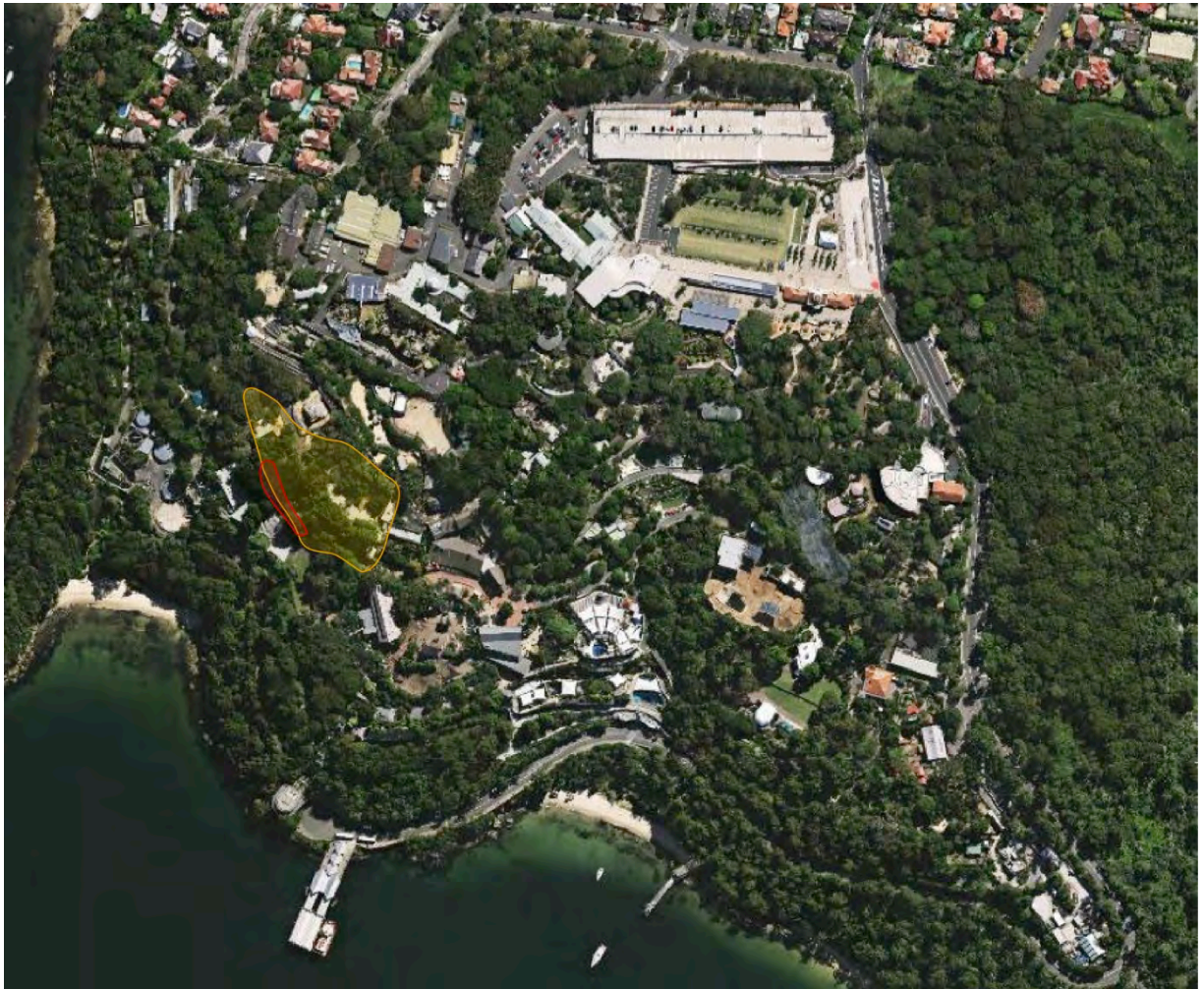


Figure 1.1 Aerial photo of Taronga Zoo showing the approximate study area shaded in yellow. The red shading indicates an area adjoining the site where trees are proposed to be removed as an early works package. Source: LPI SIX viewer annotated by Jean Rice Architect



Figure 1.2 Aerial photo of Taronga Zoo showing the approximate study area shaded in yellow. The red shading indicates an area adjoining the site where trees are proposed to be removed as an early works package. Source: LPI SIX viewer annotated by Jean Rice Architect

1.4 Methodology

This HIS is consistent with the Conservation Strategy recommendation:

A Heritage Impact Statement (HIS) should be prepared for all new developments at Taronga Zoo to identify potential impacts on items in the vicinity, views, setting, original pathway layout, landscape and built elements, archaeology and the site as a whole.

Previous Reports

A number of previous reports for the Zoo have been used as the basis for the assessment of the proposed impacts on the heritage values of the place, including:

- Section 170 Heritage and Conservation Register, April 1998, prepared by the Heritage Group of the New South Wales Department of Public Works and Services and subsequently updated by TCSA;
- Taronga Zoo Conservation Strategy, July 2002, prepared by Godden Mackay Logan, endorsed by the NSW Heritage Office;
- Taronga Zoo Archaeological Management Plan (AMP), November 2002, prepared by Godden Mackay Logan, endorsed by the NSW Heritage Office; and
- Taronga Zoo Landscape Management Plan (LMP), November 2006, prepared by Design 5 Architects, Geoffrey Britton and Dr Ben Wallace.

Section 2.0 of this report provides a background to the cultural landscape, significance and conservation policies relating to the subject development area and Section 3.0 details the heritage significance.

A description of the proposed development and an assessment of the impacts arising from the proposal on the heritage items within the precinct, in its vicinity and on the significance of the Zoo as a whole is addressed in Section 4.0.

The mitigative measures and conclusion are contained in Section 5.0.

The methodology is based on the guidelines contained in the *NSW Heritage Manual* (DUAP and the Heritage Council of NSW, 1996) and the principles contained in the Australia ICOMOS *Burra Charter*.

1.5 Study Team

This report has been prepared by Jean Rice, Senior Project Manager Heritage, with the Capital Works Infrastructure and Operations (CWI&O) Division of Taronga Zoo, assisted by Dr Noni Boyd, architectural historian, and was reviewed by Daniel Djikic, Project Manager, and Tim Bain, General Manager Development CWI&O, TCSA.

1.6 Terminology

The terminology used within this report is consistent with the NSW Heritage Manual and the definitions contained in the Burra Charter of Australia ICOMOS. Throughout this report, the terms *place*, *cultural significance*, *fabric*, *conservation*, *maintenance*, *preservation*, *restoration*, *reconstruction*, *adaptation* and *compatible use* are used in accordance with the definitions of the Burra Charter.

The reference number identification for heritage items within the Zoo follows the existing terminology established in the Section 170 Heritage and Conservation Register, Conservation Strategy, Archaeological Management Plan and Landscape Management Plan.

Abbreviations

AIA	Australian Institute of Architects
AHIP	Aboriginal Heritage Impact Permit
AMP	Archaeological Management Plan
CMP	Conservation Management Plan
CMS	Conservation Management Strategy
CWI&O	Capital Works Infrastructure and Operations
GAB	Government Architects Branch (now Government Architects Office)
HIS	Heritage Impact Statement
ICOMOS	International Council of Monuments and Sites
LEP	Local Environmental Plan
LMP	Landscape Management Plan
NSW	New South Wales
OEH	Office of Environment and Heritage
PWD	Public Works Department (now Public Works)
S170	Section 170 (Register) under the NSW Heritage Act
SSD	State Significant Development
TCSA	Taronga Conservation Society Australia
TZ	Taronga Zoo
ZPB	Zoological Parks Board

2.0 Outline Historical Context and Physical Description

2.1 Character of the Study Area

The study area is defined by the Bird Show roadway (below and southwest of the site), the Sun Bear enclosure to the east, the Waterhole Path above the site to the northeast and the Tahr Mountain enclosure to the northwest. Within this are located a number of wildlife exhibits, trees and landscape elements. These elements contribute to the visual character of the Zoo site and with their original design and modifications for use continue to act as markers of the site's historical development and its cultural heritage values.

2.2 Historical Context

The Conservation Strategy identified five key phases of historical development at Taronga Zoo since its initial construction began in 1913. These key phases correspond to tenures of various key zoo Directors or Superintendents and generally reflect each director's zoo management philosophy. The key periods are described below with a brief discussion of the site and items in the vicinity during each period.

Nineteenth century maps, including the parish maps for Willoughby and surveys of Port Jackson give an indication of the landform prior to the establishment of the zoo. Three substantial portions of land were granted to Charles Jenkins. The trigonometrical survey of Port Jackson prepared by Sir Thomas Mitchell shows that paths led to the various promontories by the early 1850s. A track is shown to Whiting Beach and another to Bradley's Head.



Figure 2.1 Extract from Thomas Mitchell's Trigonometrical Survey of Port Jackson dated 1853 showing Bradley's Head. The later location of the Zoo is indicated. Source: SLNSW Z/M4/811.15/1853/1

A detailed survey of the proposed site of the Zoological Gardens was prepared by the Public Works Department in 1912. This survey shows the location of the Quarantine Station, the tramway from Athol wharf and two walking tracks, which seem to have led to a vantage point above Whiting Beach. Small streams are also shown. The only structures shown are the sheds associated with the Quarantine Station and Public Works site establishment at the east of the site. Part of the Quarantine Station pens and yards was incorporated into the grounds of the Zoological Park and the facility was relocated in 1916.

2.1.1 Phase One: Initial Construction 1913-1916 (Designer Albert le Souef)

During this period the basic infrastructure of the Zoo was constructed, including the network of pathways. The topography dictated the basic layout of the site from the start, with pathways largely constructed along the contours traversing east-west, and connected by staircases. The basic layout capitalised on the natural sandstone rock ledges across the site. In planning the zoo the Superintendent, Albert le Souef, was inspired by Hagenbeck Zoo in Germany, the most modern zoo in the world at that time. Taronga was designed around the concept of a bar-less zoo, with enclosures for animals constructed with the most open plan possible, without a roof or bars where possible but with a surrounding concrete wall and moat separating the public from the animals. Following the outbreak of World War 1, Colonel Alfred Spain, a local architect and Vice-President of the new Zoological Gardens Trust, transferred the design and construction of the Zoological Gardens to the NSW Government Architect (within the NSW Public Works Department).

A number of early plans survive however not all depict the layout of the site as erected. The published 1916 plan (following) shows that the area was divided into a series of plots separated by pathways. The study area is designated 'felines' (23) and two formal enclosures are shown along with three more open exhibits (presumably for smaller cats, a use shown on later plans). This plan also shows that, prior to and possibly during construction, alterations were made from the original proposed layout, including relocating the entrance closer to Bradley's Head Road rather than as originally proposed - centrally on the north boundary. Not all the intended paths shown on the plan were completed when the Zoo opened.

The two initial enclosures for large cats, one for lions and one for tigers were part of the exhibits on display when the zoo first opened in September 1916. These enclosures were designed by the Government Architect's Branch in 1915.² Both lions and tigers had already been on display at Moore Park. These animals appear to have been used to being in captivity as in discussions regarding moving the animals it was noted that the lions and tigers would not be a problem.

An illustrated article that appeared in the Sunday Times in September 1917 explained the philosophy behind the new animal enclosures.

The scheme adopted for the housing of the animals is modeled on Continental and American practice. Iron bars and wooden walls have been cast into the discard, and the first impression gained from the changed aspect of affairs is the more humane treatment afforded the animals. The spectacle of caged lions and tigers was always an offence, somehow, though for the layman there seemed no way out of the difficulty. The problem has been solved in simple fashion. The fiercest lion or tiger imaginable cannot leap more than a certain distance, more than a certain height. Provided, then, that he is surrounded by a ditch that is wide enough and a wall that is sufficiently high, he may be considered safely housed from the point of view of the spectator. That is what has been done at Taronga....

The Lions Den. In providing accommodation for the king of beasts, close attention has been paid to preserving some imitation of the natural habitat of the inmates. The rocks have been carved and moulded so as to provide the sort of lair we think of as being inseparable from a lion in his domestic circle.³

² SHI Inventory Form for Item 52B, Upper Bear Pits

³ Sunday Times, 17 Sept 1916

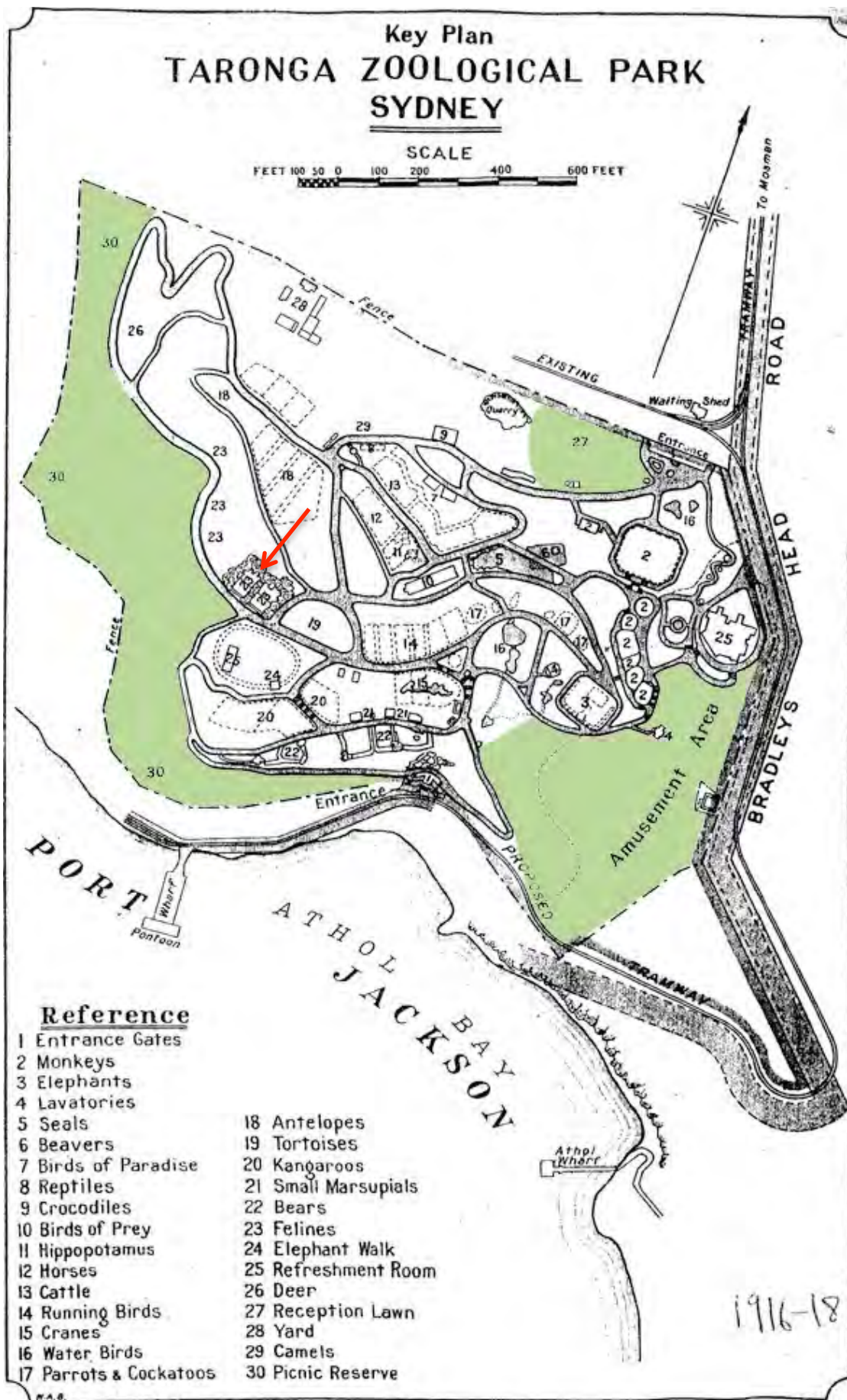


Figure 2.3 Key Plan, Taronga Zoological Park Sydney, 1916. The two initial enclosures for large cats (felines) are arrowed. Source: copy from Landscape Management Plan

A series of photographs of the Zoological Gardens, that includes images of the lion and tiger enclosures taken in 1917, survives in the Government Printers Collection. One photo is labelled tiger's pit and the other shows a lion. These photos show mock rock enclosures that appear to incorporate sandstone rock shelves. Ledges were built for the animals to sit on so that they could be seen by onlookers. Later plans to alter the exhibits show that the mock rock separating the two enclosures contained a tunnel. The mock rock wall between the pits and the tunnel within it were removed in 1999.



Figure 2.4 The Tiger's Pit, February 1917. The lions pit was to the right of this. Source: ML GPO1 still 18453

2.1.2 Phase Two: Consolidation 1916-1940 (Superintendent Albert le Souef)

This period spans between the official opening of the Zoo in October 1916 and the departure of Albert le Souef as Superintendent of the Zoo in 1939. This period was characterised by a reinforcement of the juxtaposition of cultivated ornamental gardens within the setting of the bushland landscape. The 1920 plan shows dotted the network of paths in the north western corner indicating these were not completed or were 'back of house' areas. The paths went as far as the two enclosures for the lions and tigers (19). Opposite was a short-lived 'wolf and dingo' exhibit (18). A drawing survives of the hyena and wolf enclosures dated 1916.⁴ Photographs taken in 1924 (see later) show the lion enclosure. Later maps label the enclosure to the west as being tigers and the enclosure to the east as being lions.

⁴ PWD Plan A2248, February 1916

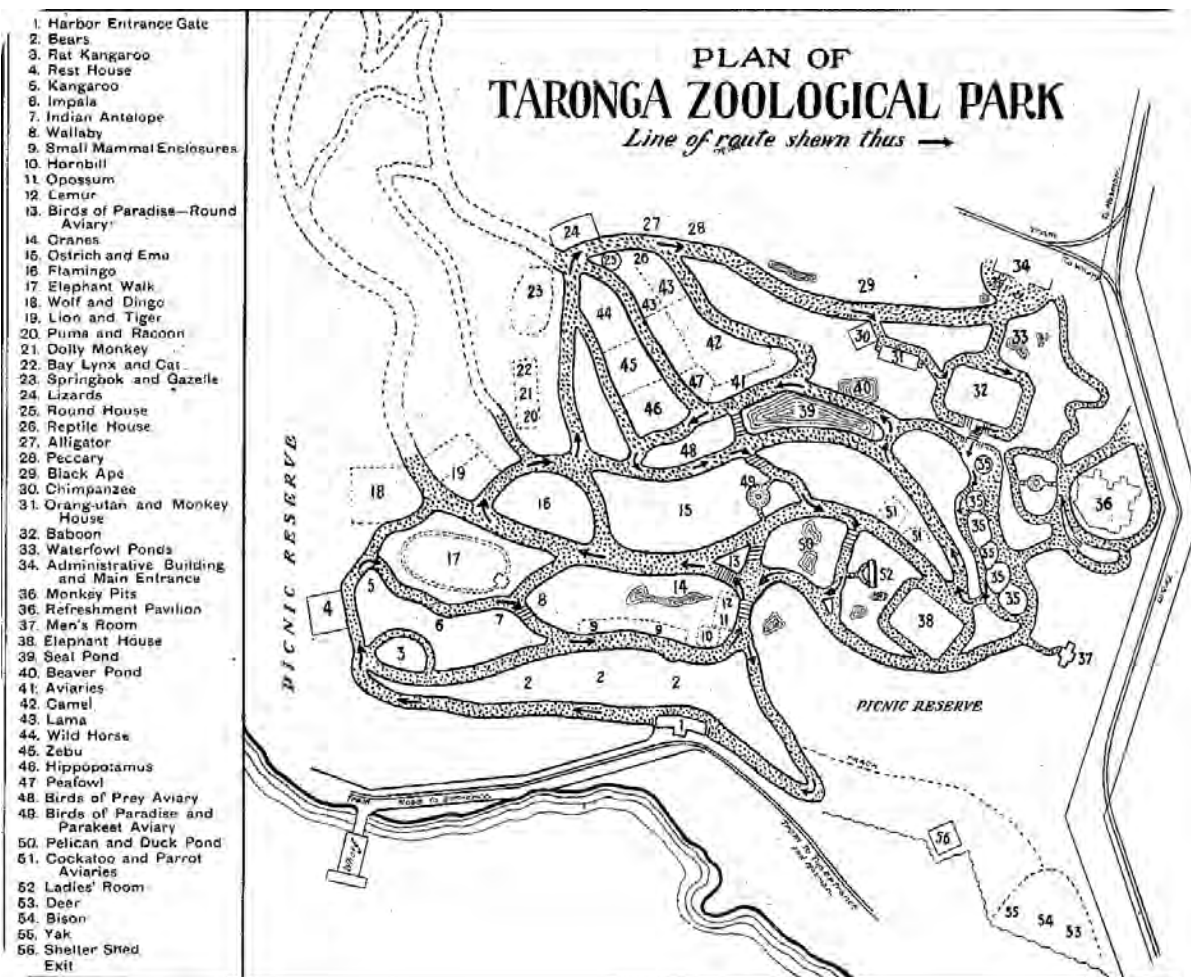


Figure 2.5 The 1920 map shows the location of the tigers and lions (No 19). Source: Taronga Zoo Archives



Figure 2.6 1924 view of the lion enclosure. The tiger enclosure was to the left. Source: ML GPO1 19127

In April 1924 a shipment of new animals arrived, including two jaguars. This consignment of animals was part of an exchange with South America.⁵ Their new enclosures were not officially opened until July 1925.

The Leopard's Dens, Installed at the Zoo, Ceremony performed by Mr Lang. Three new enclosures for the leopards, jaguars, and pumas were officially declared open for inspection at the Zoological Gardens yesterday by the Premier (Mr. Lang). Hitherto these animals have been confined in cages. The enclosures are similar to those in which the lions and tigers are confined, and adjoin them, forming what one of the onlookers termed Carnivora-terrace.

The Premier was conducted to an electric button placed at the centre of the front wall of the leopards' enclosure. The button was pressed, doors were opened, and out came two leopards. The female leopard, seeing the crowd in front, retired hastily, but her consort seized a large piece of beef before he retreated from the crowd. On the right was the jaguars' enclosure in which two were confined. The animals were scared by their new surroundings. They, however, took charge of the meat which was found on the floor of the cage. The pumas, three in number, which were located on the left of the leopards' den, had settled down, and appeared already to realise that they were in their own permanent homes.⁶

Premier Lang was photographed pressing the button to let the leopards out.



Figure 2.7 Mr Lang opens the new home for Carnivora. Source: 9 July 1925, Newcastle Morning Herald



Figure 2.8 Part of the new carnivora house at Taronga Zoo, taken in 1925. The fence at the front is the fence in the photo of Premier Lang. The moat was behind the fence. Source: ML GPO1 15943

The article on opening the Leopard Dens also noted that these works had been undertaken by unemployed returned soldiers. The Zoo Trust had been given a grant by the previous government to provide work and the Lang administration continued the scheme. It was noted that only two tradesmen had been employed, a carpenter and a plasterer. Special permission had been sought from the union in order that the returned servicemen could be taught 'builders' work, reinforced concrete, and road making'.⁷

In addition to opening the Leopard Den's, the ministerial party also planted a number of Western Australian Flowering Gums. A cheekier account appeared in the *Society Doings in Sydney* column of the Australasian:

⁵ Adelaide News 23 April 1924

⁶ SMH 8 July 1925

⁷ SMH 8 July 1925

Carnivora terrace, one of the fashionable residential quarters of the Sydney Zoo, has just received some fresh tenants. The leopards, pumas, and jaguars, who, since they emigrated from their homes in the old world, have had to put up with tiny flats, with bars for front doors, have now been moved into fine airy quarters - behind stone fortifications, it is true, but with the open sky above them, room to "do the block" when they feel like it, and cosy shelters to which they can retreat when they become bored or cold. These new quarters, which put them on an equality with the lions and bears, were formally opened on Tuesday, July 7, by the Premier (Mr. Lang), and a party was given by the Taronga Park Trust to a number of guests, who were entertained at luncheon. The animals showed considerable distrust when introduced to their enlarged premises, and examined them a little suspiciously, as if to see if hot and cold water had been duly installed. However, some nice succulent joints of meat, prominently placed in the *salle a manger* [sic] soothed their spirits, and they speedily settled down in their new, healthy, and airy homes.⁸

Doing the block was a term that, E H Collis noted, had fallen out of fashion by 1925 and referred to walking a circuit around the block containing the GPO.⁹

Photographs of the new 'carnivora house', including a view from across the top the enclosures to the harbour were taken in June 1925



Figure 2.9 View looking southwest over the carnivora exhibit, taken in 1925. Source: ML GPO1 15950

The puma, leopard and jaguar dens can be seen on the 1929 map of the Zoological Gardens, as can the new path to the rear of the dens. A duck pond had been created to the west of the puma den. The 1929 map also shows that the dingo cage had been replaced by steps down to the picnic area, one of a series of areas within the Zoological Gardens set aside for picnic groups.

⁸ The Australasian 18 July 1925

⁹ Doing the Block, Empire 20 Feb 1925

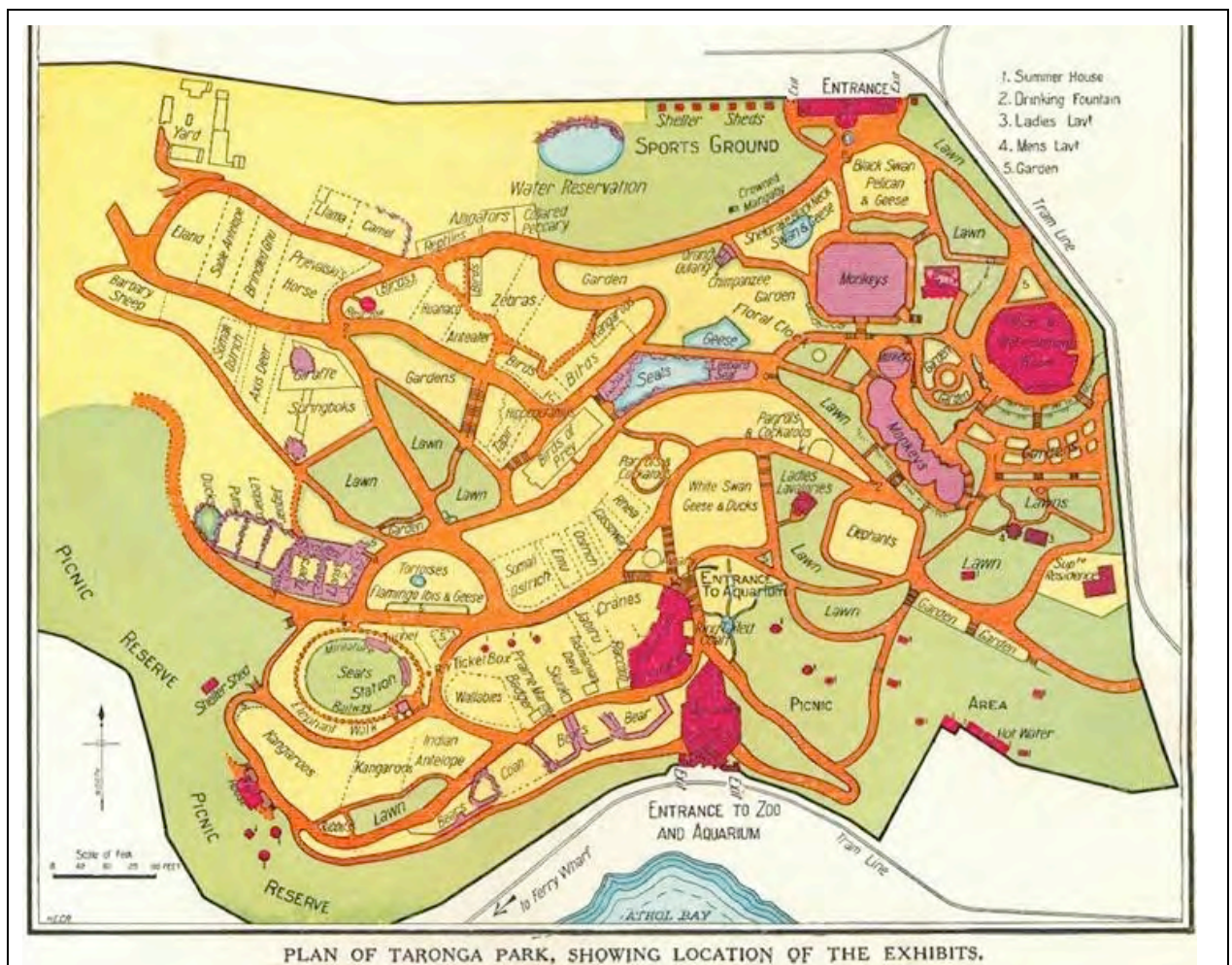


Figure 2.10 Zoo plan from 1929 guide showing three dens west of the first two dens. Source: Taronga Zoo archive



Figure 2.11 Crowds at the row of lions and tigers dens, March 1930. Source: GPO 1 still 22157

Photographs of the pumas and jaguars in their dens appear in the series of photographs of the Zoo taken in 1930 as did a view of the crowds at the row of five dens.¹⁰ The five dens and the adjacent pond can be seen in the circa 1930 aerial. The enclosures below the road on the bottom left of the photo are shown in the 1933 Zoo guide plan as being dingo / hyena enclosures. Although the grounds below the roadway had been used for picnics, the aboriginal hand stencils survived. Their location is shown below. The pond was filled in by 1943, as it does not appear on the wartime aerials.



Figure 2.12 c1930 image with the Aboriginal site approximate location arrowed. Note the path to the rear of the upper right lion and tiger enclosures. Source: From copy held at the Heritage Design Services, GAO

The lions den at the Zoo was well known to Sydneysiders, continuing to appear in satires:

Somebody writing to the Sydney 'Dally Telegraph' complains about the noise and lack of manners on Sydney's beaches, and says that if one is in quest of peace it would be preferable to have lunch in the lions' den at Taronga Park.

IF YOU WANT a little quiet - if you do,
Then go amongst the lions at the Zoo,
Also interview the tigers, and you'll get
Some semblance of the thing called etiquette.
Go out, and with the many monkeys mix -
And then you'll find the beaches' manners nix!¹¹

During the end of this period the zoo experienced a number of changes, due to the economic depression and a change in philosophy. In 1933 Colonel Spain made the decision to have the original dry moat around the lion enclosure filled in and replaced with a chain wire fence to allow people closer to the animals. The decision was significant in that the lion enclosure had been the centrepiece of the bar-less zoo ideal that Taronga had been designed upon. The reason for the change was that it would allow for the public to move closer to the lion cubs and provide the lions with more time in the sunlight, without the shadows of the south facing former den. The 1934 plan shows that the Hyenas and Dingoes were located near the Tahr Mountain, the latter erected in 1932. Opposite is shown two enclosures labelled Tiger and Cheetah. Two smaller dens, labelled jaguar and lion, are shown above the original two dens facing the upper road. There were now 9 different cat enclosures: three tiger dens, two jaguar dens, two lion dens, one leopard and one cheetah. A men's lavatory had been erected to the east of the initial two enclosures.

¹⁰ ML GPO1 22140-22160 and 22402-22447

¹¹ The Australian Worker 8 April 1934

By November 1934 the zoo had five lion cubs to display. An American flying ace Col Roscoe Turner, whose hobby was lion taming, was allowed into the den with the cubs. The parents 'roared their objections' from the adjacent den.¹² Reports of live broadcasts from the Zoo in the mid 1930s note that the performances given in the bandstand were repeated in other locations including an amusement area near the Lions Den. Amalgamated wireless provided the equipment.¹³ The amusement area was inside the elephant walk and train track. In 1935 the arrangement of the dens was altered once again, adding yet another den. A large lion den in the form of a pit was erected. This pit differed from the previous enclosures with an upper level walkway around the whole of the pit with visitors looking down into it. This pit was located to the north of the three small pits in an area previously undeveloped. The Minister for Labour opened the new 'lions pit'.

The Minister for Labour (Mr. Dunningham) told the trustees of Taronga Park yesterday that, during his recent trip abroad, he had visited the zoos in India, England, on the Continent, and in the United States of America; but had not seen anything to compare with Taronga Park. Mr. Dunningham declared open the new lions' pit at Taronga Park, which was stated to be unique. It is 84ft long, 71ft wide, and 15ft deep, and is capable of accommodating eight lions. In the centre is a representation of Australia, on which is superimposed a huge rock. As soon as the doors of the lions' dens were lifted by pressing an electric button, five of the animals moved into the enclosure, the largest climbing to the top of the rock, where it sat and gazed out on the crowd gathered along the railing which surrounds the four sides of the pit. "You will not see this in any part of the world," Mr. Dunningham stated, referring to the new pit, and the opportunity which, he said, it gave the public of seeing the animals in something approaching their native state.¹⁴



Figure 2.13 Lion Pit photographed in 1942 looking to the north. The map of Australia may be the concreted section to the RHS. Source: ML GPO 1 still 23527

¹² SMH 14 Nov 1934

¹³ SMH 17 Nov 1934

¹⁴ SMH 13 December 1935

Colonel Spain noted that the new lion pit, with its pathway above, was amongst the largest in the world.¹⁵ The new exhibit was clearly popular:

There are five lions in the lions' pit now, and while waiting for their tea, the young lions passed the time away by trying to jump up and catch the small boys perched near the top of their den.¹⁶

The press noted that the lions appear to have liked their new pit:

In the midday sun the lions' pit resembles a Roman villa after one of Nero's more ambitious parties. They sprawl abandonedly, faces towards the sun, and find life very good.¹⁷

No early detailed photographs of the new enclosure have been located, the earliest views online or in the Zoo archive are dated 1942. The map of Australia in the lion pit was advertised as a drawcard.



Figure 2.14 School holiday advertisement for the Zoo. August 1936 Source: SMH 24 Aug 1936

The Zoo continued to occasionally let visitors into the carnivore dens with the cubs. The conductor Dr Malcolm Sargent went into the den with the three jaguar cubs.

Then there was the great new lion pit, with the huge concrete map of Australia in the centre. One of the King of Beasts was lying neatly curled up in Victoria, but with only the tip of his tail in New South Wales. "Scarcely patriotic," said the doctor.¹⁸

The map proved to be a maintenance nightmare but survived until at least 1953, when three cubs were born, one of whom later died. The exposed nature of the pit was then criticised, the lioness having given birth on the 'Central Australia' section of the map, in full view of visitors.

A report on the Zoo attendances which appeared in January 1938 noted that additional new 'carnivora pits' were proposed to be constructed.¹⁹ The three small dens inaugurated in 1925 were taken out of use and by 1939 the wall was removed between the two eastmost and the site marked as proposed retiring rooms. A small retiring room for ladies had already been erected in the north western corner of the tiger den, the westernmost of the original two dens.

The opening of a new Tiger Pit by the Minister for Works Mr Spooner appeared in the CineSound Review on 3 June 1939. A few days earlier a view of the flag draped tiger enclosure appeared in the Sydney Morning Herald, on the same page as a view of Herr Hitler inspecting his western defences.²⁰ The pit was to the west of the loin pit with the same configuration of walkways on all sides so visitors could look down into the pit.

By 1939 the Lion Pit was more widely known as the lion enclosure

The Sydney Zoo's Lion enclosure is regarded as one of the finest in the world, and has been constructed on modern lines. In the centre a mountain has been constructed, at the base of which is the map of Australia. This spectacular enclosure measures about 60 feet square, with a depth of about 14 feet or 15 feet. The pit is so large that numbers of lions can be shown at the one time, thus making a very spectacular exhibit, especially when the lions gather on the top of the mountain. The sleeping quarters of the animals are constructed at the south-western end, and

¹⁵ SMH 8 August 1935

¹⁶ The Farmer and Settler 12 Sept 1935

¹⁷ Newcastle Herald, 25 August 1939

¹⁸ SMH 15 Sept 1936

¹⁹ Albury Banner, 12 Jan 1938

²⁰ SMH 26 May 1939

are in the form of big, airy rooms. Thirteen lions were born during 1938 at the Sydney Zoo, one litter comprising as many as five cubs, which is rarely accomplished at a zoological gardens.²¹

The outbreak of war seems to have halted the program of works in what was termed the Western Section of the Zoo.



Figure 2.14 The official opening of the Tiger Pit, May 1939. Source: Taronga Zoo Archive.

This photo is taken looking south towards the harbour. The Lion pit would have been to the left of the tiger pit in this photo. There is an arcade like mock rock structure on the south side of the pit with the walkway over. The dignitaries are on a platform elevated above the usual walkway. The shadow of people on the right or west side of the pit can be seen in the photo.



Figure 2.15 Extract from the 1943 aerial of Taronga Zoo showing the carnivore pits and the filled in pond to the west. The area between the tiger pit and Tahr Mountain was undeveloped appearing later in the 1956 and later guide maps as a lawn and garden. The southwest side of the lower pathway also remained undeveloped, probably still picnic grounds, except for the hyena and dingo enclosures and small jaguar and leopard enclosures added to the south by 1939. Source: SIX viewer

²¹ Muswellbrook Chronicle, 23 May 1939

2.1.3 Phase Three: The Hallstrom Era 1941-1967

During the period of Sir Edward Hallstrom's association with the Zoo, the refurbishment of many of the existing enclosures and the design of new animal enclosures continued to move away from the original design concept for the zoo, with the provision of functional enclosures with concrete floors and walls. This approach, while seen to be practicable, was not always sensitive.

The zoo remained open during the war years. New cubs continued to be born. In 1944 one of the lions was killed fighting with the others in the pit. By March 1945 new shipments of animals began to arrive, initially from America. An exchange with Adelaide Zoo meant that the Taronga Zoo obtained a eight month old tiger named Stripes. Three more tigers arrived from Singapore in September 1946. More animals were ordered or obtained from other zoos in exchange for Australian species and the expansion into the western portion of the zoo continued. The 1956 plan shows cheetahs, hyenas and leopards to the west of the carnivora pits but on the other side of the pathway. Below, in an area previously set aside for picnics, were the black swans, the rare Pere Davids deer (which arrived in 1949), an Ape enclosure, Goura pigeons and pumas. The arrival of chimpanzees and gorillas meant that new enclosures had to be erected during 1953. The old monkey pit was to be converted into a mountain for climbing kangaroos and the monkeys relocated.²²

The 1962 aerial shows the mock rock mountain erected for the mountain goats, built using unemployment relief funds in 1932, the tiger pit and the larger lion pit with the central rocky mound. The space between is trees and grass. The smaller three pits erected in 1925 had partially been demolished and a ladies retiring room built in the two eastmost pits and only the west pit remaining. The camouflage roofed sheds do not appear on the 1943 aerial and must be the Ape enclosure shown on the 1956 plan. Although the roof of the Ape exhibit has camouflage paint, the structure appears to postdate the war. The Pere Davids deer enclosure is further left (west) with an open yard and only the southern side of the exhibit roofed. Prior to the erection of these exhibits, this area had undergone little development, hence the survival of the Aboriginal hand stencils. The 1960 plan of the layout shows a similar arrangement.



Figure 2.16 This c1962 aerial image from the south shows the early carnivore enclosures top right, the Tahr Mountain top left. Below the road is a series of enclosures extending around to the right to a ramp leading to a new lower level road and the Pere Davids Deer and Ape enclosures. The east wall of the upper right Lion enclosure is visible showing the shelters on that side (which may remain today) but the wall is in shadow and the shape of the openings is not clear. Source TZ Archives

²² Newcastle Morning Herald 20 Dec 1952



Figure 2.17 This c1962 aerial image from the north shows the early carnivore enclosures bottom left. The image shows the arcaded sides that formed shelters in the tiger and lion pits with the garden area to the right and Tahr Mountain centre right. The Ape and Pere David deer enclosures are at the top of the image. The level of the ground in the lion pit appears higher than that in the tiger pit behind. Source TZ Archives

Photographs from the mid 1960s show that the lion pit was virtually unchanged. The pond to the west had been filled in and three trees planted. These trees are not shown in the 1943 aerial. Photographs of the lion pit taken in 1966 show the walkways that surrounded the lion pit.



Figure 2.18 1966 view of the Lion Pit showing the mock rock and upper walkways. Note the arcade creating sheltered areas on the right and the doors to dens on the left. NAA

2.1.4 Phase Four: Restructure 1968-1986

Following the retirement of Hallstrom as Director of the Zoo in 1968 and the recommendations of a number of reports on the conditions of animal enclosures, many of the Zoo's aging displays were replaced and a new emphasis was placed on the zoological and educational role of the place. In 1970 a new Masterplan for Taronga Zoo was prepared by the NSW Government Architects Branch. The plan sought to retain what remained of the natural topography and vegetation. The carnivora were to remain in the same location but some modifications to the exhibits were proposed. New pavilions and aviaries were built to better display Australian species including the Koalas and Platypus. In contrast to previous exhibits, these new displays were walk through and included ramps and viewing platforms.

For the more dangerous animals the more traditional pits survived for longer, as there were few alternatives that could provide the required separation between the visitor and the big cats.

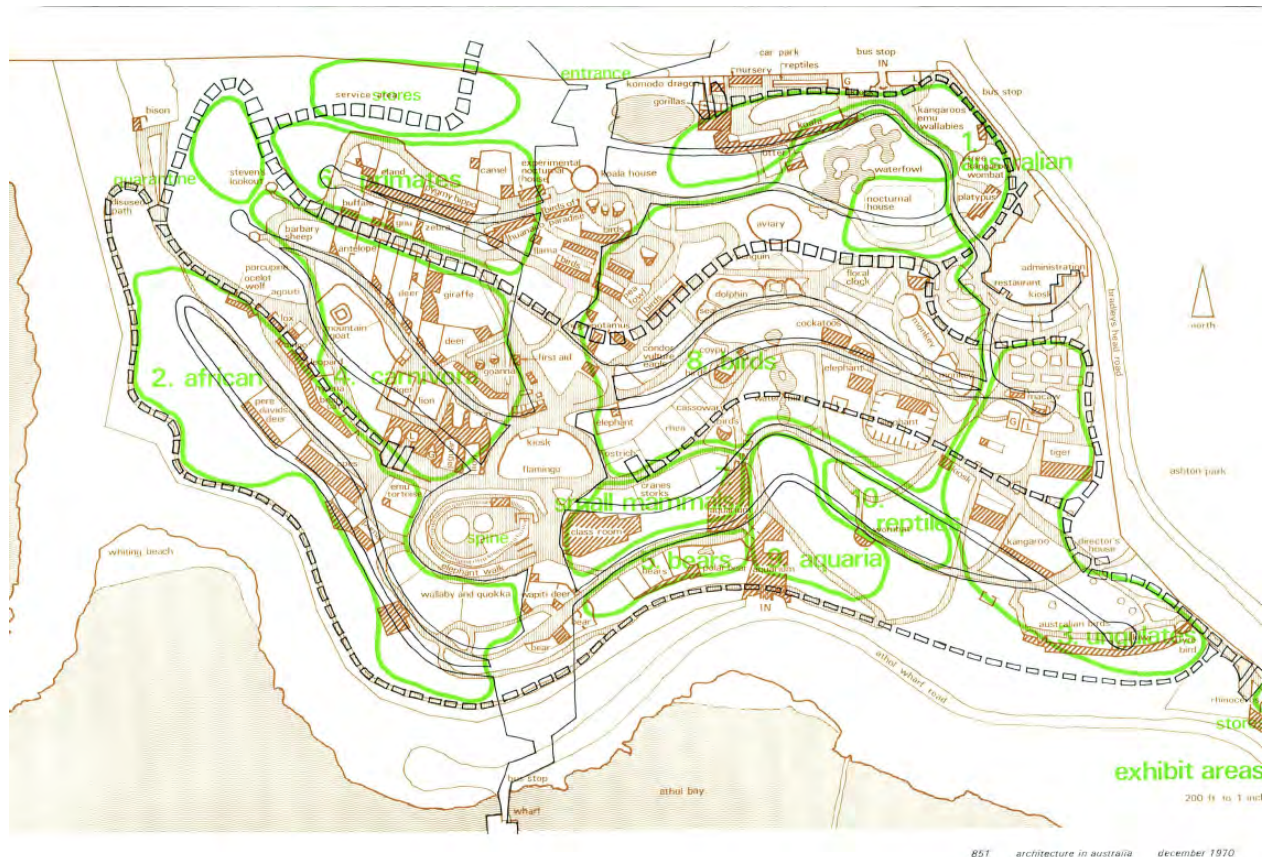


Figure 2.19 Exhibit areas at Taronga Zoo. Source: Architecture in Australia December 1970



Figure 2.20 This 1979 aerial photo shows the area little changed with the tiger and lion pits with their arcaded shelters and high level walkways remaining. The lower level roads and exhibits are also unchanged. Source: Taronga Zoo Archive

During the 1970s the Kodiak Bears and the Black Bear were relocated into the original two carnivora pits. The Zoo had obtained bears from the Kodiak Island in Alaska in 1948 however in 1953 the male bear was killed by vandals. Other animals were also injured. A new mate for the female Kodiak arrived in 1954. The 1970s Water Board plan also shows that the WCs built within two of the three additional pits were now in use as offices and the one remaining pit was for jaguar. The Tiger and Lion pits remain with an area to the left for small cats. Changed uses of the small exhibits on the southwest side of the road are shown including birds, squirrel, monkey, lemur, small baboon monkey and several native dog enclosures. The new road below now meets up with the old road near the bird exhibit at top left. This means that the rock cutting on the route of this road must have been made at this time. Lower down the hill the former deer enclosure is shown as for the Pygmy Hippos and Monkeys and Orangutan are in the former Ape enclosure.



Figure 2.21 Carnivora pits at Taronga Zoo. The original Lion and Tiger pits are labelled Black Bear and Kodiak Bear. Source: Water Board diagram 1970s

In 1977 the Western Plains Zoo at Dubbo opened, which had been established to provide animals with considerably more space to roam in. The species were separated by sunken moats, which were designed to not interrupt views.

From the mid-1970s to the mid-1980s Taronga repositioned itself as an authority in animal management. A comparison between the 1962 aerial and the 1970 aerial shows that there had been a move away from the use of formal gardens such as the rockery. Reports in the 1930s referred to the thousands of flowering plants grown and used on the site. Australian species were now favoured or plantings themed for exhibits.

2.1.5 Phase Five: Planning for the New Millennium 1987-Present

The major goals during this period have been to develop all exhibits and visitor facilities to international standards, ensuring high standards in animal management. Major capital works have been undertaken throughout the zoo during this period.

The Section 170 heritage register was prepared in April 1998 however heritage items had been identified previously in the 1989 Masterplan including the Lion and Tiger Enclosures (number 20 on the plan below) and the Bear Pits (number 17 on the plan below). Many of these items were subsequently altered or removed. Detailed drawings are available for many of the projects of this era.

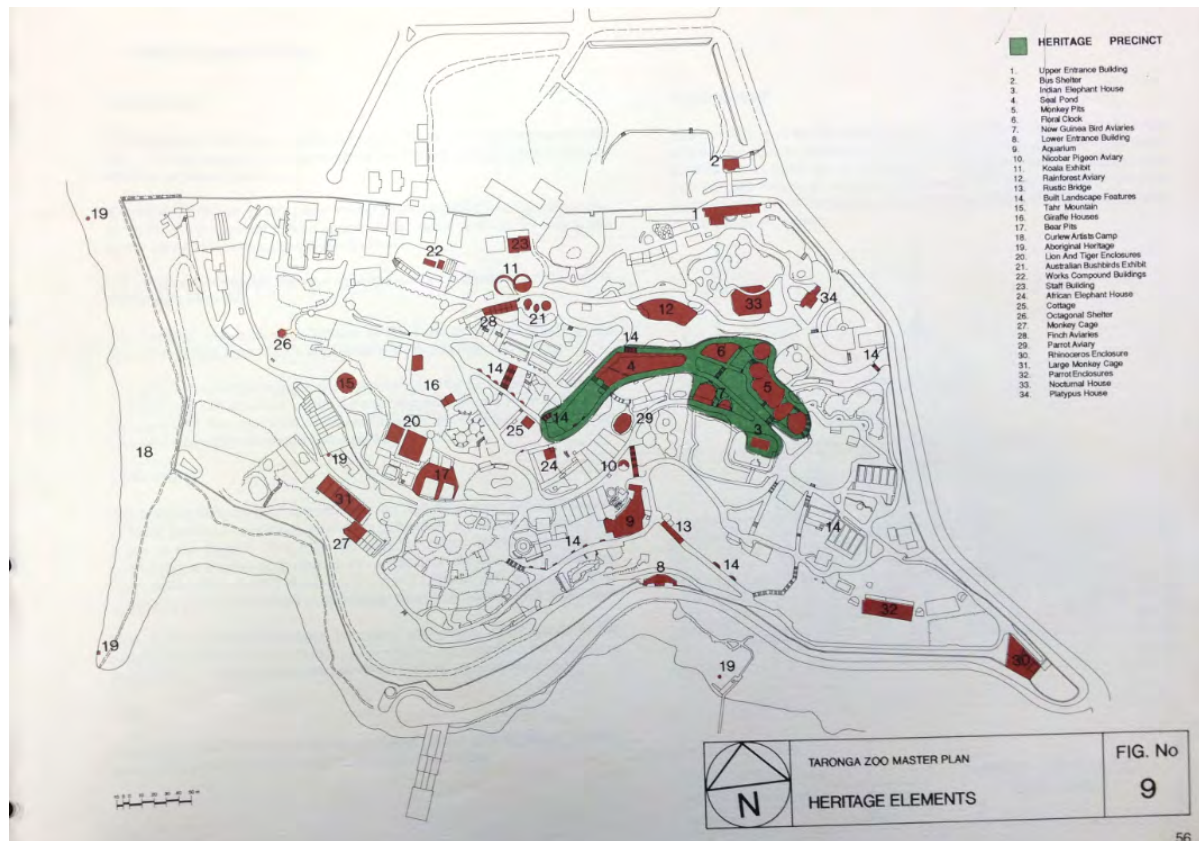
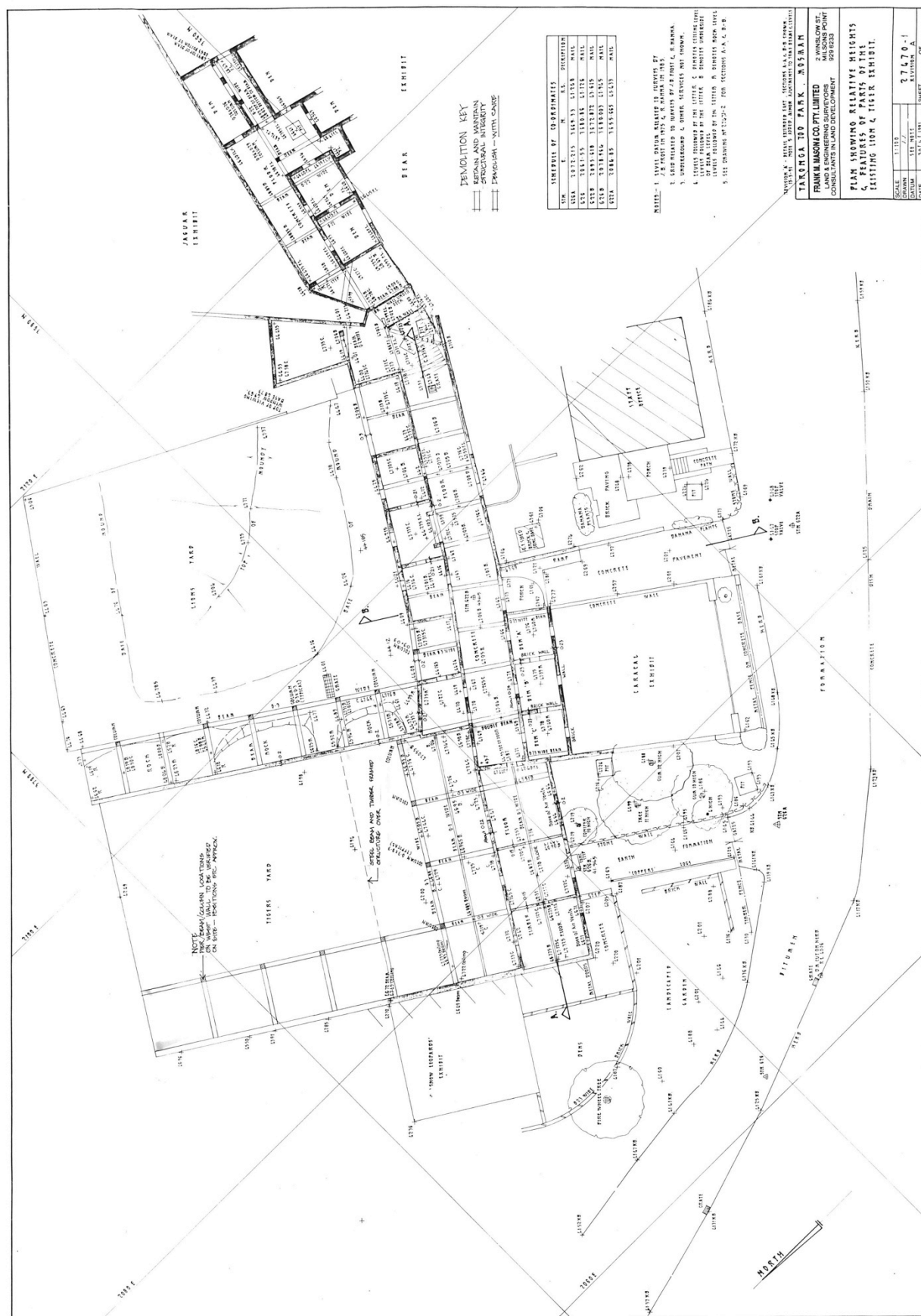


Figure 2.22 Plan showing heritage items from the 1989 PWD Masterplan including the lion and tiger enclosures and the bear pits. Many items on this plan have since been removed or altered.

In 1991 the former Tiger pit was altered to become the White Tiger Exhibit. The south wall of the exhibit was removed and the upper level walkway over it and a new low level viewing area was constructed behind curved glazing with tiger dens over. The entrance was to the west of the last of the three small former carnivore exhibits. The one surviving pit is shown on the 1991 site plan as Caracal exhibit. The arcade of mock rock shelters on the southwest wall of the pit was removed along with those on the southeast wall. The plan for the new White Tiger exhibit notes that the display area walls were to be retained. In the 1991 plan the Lion pit to the right (east) is shown in dotted outline giving the layout of the associated dens and is indicated as Stage 2 of the project. Staff offices are shown in the former restrooms within the former small carnivore pits.

At this time the mock rock arcades remained in the Lions' pit and a mound is shown at the centre, not the mock rock island shown in earlier photos. The former high levels walkways were made into garden beds and glass viewing windows were shown in the northeast wall. These were below the upper path which was at level 49.9m with the top of the windows at 49.6m. There was a ramped public viewing area along this wall with glass windows into the lion exhibit and the jaguar exhibit to the east. The windows to the jaguar exhibit were shown to be 'bricked up' in 1996 when a lion (jaguar) viewing window was built on the north side of that exhibit. The viewing area between the lion and jaguar exhibits is now keepers' offices and facilities.



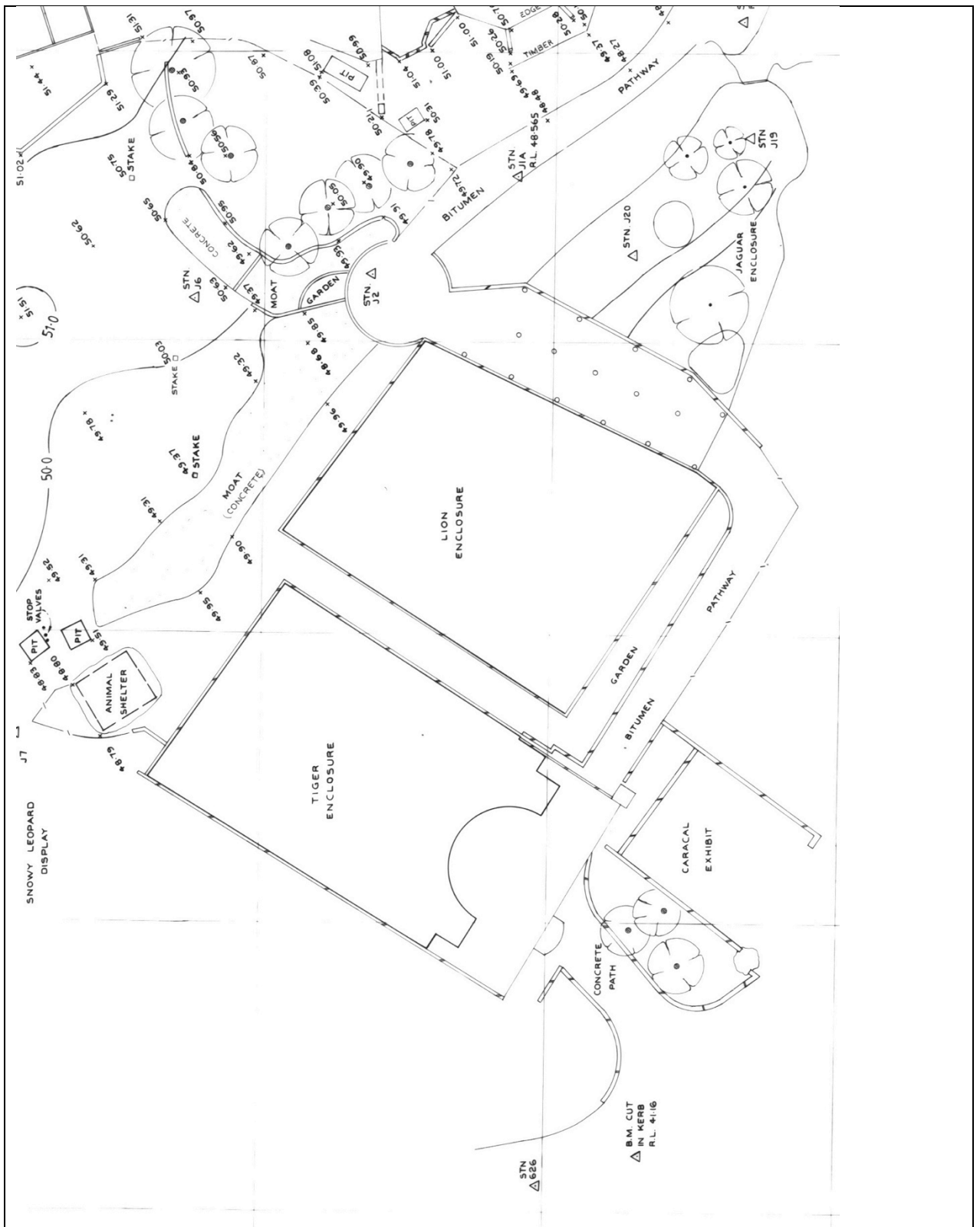


Figure 2.25 Extract from survey showing sections the lion and tiger pits after alteration. The walkways remain around the lion enclosure but are shown as garden beds. Source: PWD plan room

Stages 2 & 3 of the new carnivore exhibit proceeded in 1992 /1993 on the site of the former Lion pit and Carnivore pit (then the staff office). The demolition plan shows the removal of the arcaded structure on the west wall of the enclosure and the demolition of the dens on the south side and the Caracal exhibit, staff office and remaining mock rock. "Viewing windows" (3 no.) on the east wall of the enclosure are shown to be removed and filled in with mock rock. However two niches / caves remain there today and it is not clear how these related to the viewing windows (they appear have been under the viewing area floor).

In 1989 a new exhibit had been designed and built for the Snow Leopard to the west of the Tiger exhibit in the area earlier shown as for small cats. This was built around an existing curved rock face comprised of natural sandstone ledges and mock rock. The exhibit was a main curved steel frame and trussed columns supporting a mesh enclosure. Natural water flows were enhanced to create pools and a waterfall and the water recirculated. Ponds, bridges, boulders and planting of Himalayan species in the public area created a themed exhibit surround.

In 1999 / 2000 substantial works were undertaken to the original two carnivora pits for the Kodiak bears. The pits were reworked to designs by Jackson, Teece, Chesterman & Willis (JTCW). The holding pens / dens were shared between the lion pit to the north and the Kodiak bears. The scheme demolished most of the original mock rock including the wall between the former two exhibits and the former access tunnel. The moat was retained and electric fences introduced to control animals in some parts of the exhibit. This was concealed behind 'landscaped grasses' and on the drawing this feature is described as 'hot grass'.

A new mock rock walk through viewing cave was included at the southwest corner of the exhibit (shown in the drawing following in the lower left hand corner). Rather than bare mock rock the exhibit included a series of terraces and two ponds. There were also two artificial caves (each with a heated pad) and a separate cubbing den and a climbing pole. A keepers' dais was to be built adjacent the moat near the viewing cave.

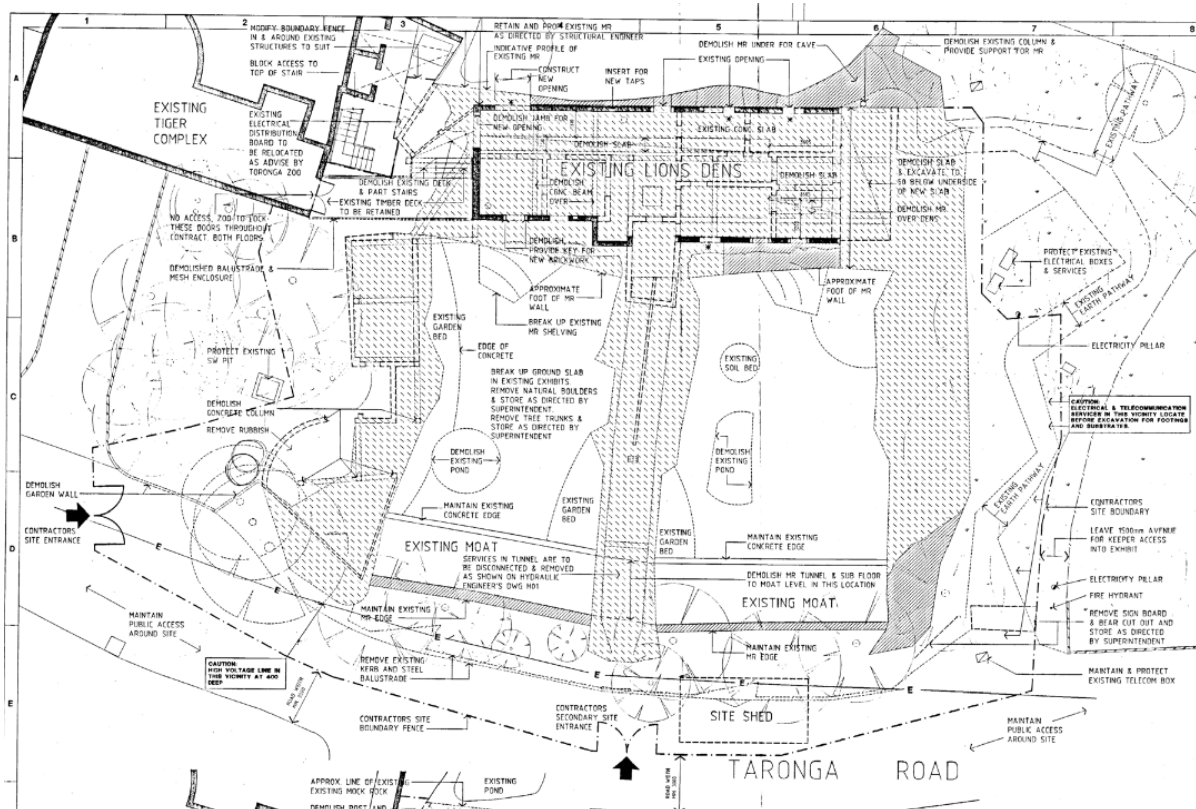


Figure 2.26 Alterations to the Kodiak Bear exhibit, 1999 by Jackson, Teece, Chesterman and Willis. The dark shaded areas are the only original mock rock retained. This exhibit was the original lion and tiger exhibits.
Source: Public Works Plan Room

2.3 Physical Description of the Study Area

The study area includes a number of features dating from the opening of Taronga Zoo as a zoological park. The area is typified by the exploitation of the site's topography and the existing waterway; a number of early built elements; the palette of materials and detailing dating from the earliest period of the Zoo's development; the contrasting approaches to landscape design and the site's relationship to the harbour. The cultural landscape components within the subject precinct are discussed below.

Existing Cultural Landscape Values

Cultural landscapes are those places that have been significantly modified by human activity and are highly valued by the community for their associations with the place. The subject precinct is an integral part of the cultural landscape of Taronga Zoo.

As stated in the Conservation Strategy:

The cultural landscape of Taronga Zoo reflects the evolution of particular cultural values, norms and attitudes towards both landscape design and the display of animals.



Figure 2.27 Natural rock ledges within the Snow Leopard exhibit which provide evidence of the character of the site until the initial phases of landscaping were undertaken for the Zoological Gardens. The feature also includes some mock rock which is difficult to distinguish from the natural sandstone. Jean Rice Architect

2.3.1 Predating the Zoo

When viewed from the Harbour, within the foreshore setting of Athol Bay and Little Sirius Cove, the cultural landscape of the Zoo provides the impression of a 'natural' setting that links it to similar adjacent landscapes along the harbour, which are now part of the Sydney Harbour National Park.

The subject precinct is located above Whiting Beach. The sandstone rock ledges are characteristic of Sydney Harbour however only the sections of Sydney Harbour National Park and the Zoo retain evidence of the natural landform. Some evidence of the natural rock shelves survives in the vicinity of the exhibit as does evidence of Aboriginal occupation of the area. The majority of the slopes have been terraced for building. The slope of the natural landform was incorporated into the carnivora pits, with pits below the level of the upper pathway and other pits extending up from the lower walkway.

The initial layout utilised the topography rather than undertake large scale and expensive reworking. The natural landform is one of the significant layers of occupation of the site. Within the study area, the

rock face containing the Aboriginal site is a remnant original sandstone feature. West of this the rock face (68L) is a road cutting made in the 1960s. Within the snow leopard enclosure are remnants of the natural landform (69L), which were not enclosed until the 1970s. Throughout the Zoo the naturally occurring sandstone has been supplemented with mock rock and the divisions are often not immediately obvious. This is the case with the sandstone rock shelves and mock rockwork within the animal pits (88L) which is listed as predating the Zoo but after detailed recent research appears to date mostly from the 1999 reworking of the exhibit.

The site contains a small remnant of bushland with more recent self sown fig trees and historical and modern plantings. See later sections for descriptions of the vegetation.



Figure 2.28 Site of the Aboriginal Hand Stencils as they appear today. Jean Rice Architect

Beneath one of the naturally occurring sandstone rock ledges in the area initially used as a picnic area aboriginal hand stencils survive (**AHIMS Site #45-6-1959**). The site was first recorded in 1990 by an amateur enthusiast (Michael Guider) and was described at that time in the following way:

Rock shelter facing south directly opposite; length 16ft, height 4ft, depth 5ft. A Port Jackson Fig tree separates the Dreamtime rock mural ... from these original hand stencils. 7 white hand stencils on wall, faint but still very clear. No occupation seen on the floor, grass lawn at front of shelter built up by retaining wall. The back of the Hunting Dog and Dingo exhibits are directly above cave.

A number of things are noteworthy including the record that no associated occupation deposits (in particular a midden) were observed in 1990 to occur within or in front of the shelter (mindful that the area was reported as grassed and visibility was probably poor). A rectangular cement pier supports the roof of the overhang. The pier is believed to have been built at the same time as the masonry animal shelters above, possibly c1940. It is likely that this support has been dug into the floor of the shelter down to bedrock, which may (or may not) only occur at a relatively shallow depth below current ground surfaces, or the pier may have been supported on a cement pad. The excavations required to install the pier will have potentially disturbed/destroyed a considerable area of any potential archaeological deposit under the dripline. It is also evident that the conditions of the rock surfaces within the shelter have deteriorated considerably since 1990 as a result of tree root growth, water seepage down the rear wall, and the loss of considerable sections of surface rock. A separate report by the Aboriginal archaeologist, Dominic Steele, has been prepared.

Adjacent to the Aboriginal stencils is one of the series of carvings in the 'living' rock undertaken by the retired stone mason Mick Leslie. This rock face was formed in the 1970s when the adjacent road was built requiring a cutting in the natural sandstone. Four carvings were undertaken in the mid 1960s to mark the four zones of the Zoological Gardens however the whereabouts of these is now unknown. The fifth carving, undertaken in 1981 utilised Aboriginal motifs that reflect the long standing Aboriginal use of the site.

After he had retired as a stonemason for Waringah Council, Leslie undertook a series of sculptures for private gardens, including Waterfall Cottage at Bayview, which occasionally open to the public under the Open Gardens scheme. He also carved the "Aboriginal Carving" at the Undercliff Reserve (dates cited vary from 1985 to 1995). As he undertook these carvings as retirement projects no record his body of work seems to have been made (as you would normally expect with an artist).



Figure 2.29 Sandstone Rock Face carved by Mick Leslie in 1981. The pier on the left of the photo has a plaque indicating the origin of the sculpture. Jean Rice Architect

2.3.2 Views

Views within the Zoo constitute an important part of the visitors' perceptual experience of the place and create vistas across the site providing orientation for visitors. Vistas of the harbour and city beyond were one of the original design intentions.

Significant views are identified in the Landscape Management Plan. The identified views are not within the study area. Views in the vicinity are general views (from above the site) and framed views from the path to the northwest and from what was originally the picnic area below. There are identified views from the paths above and below the subject site but not across the study area.

Views are shown in the following extracts from the maps showing views in the Landscape Management Plan

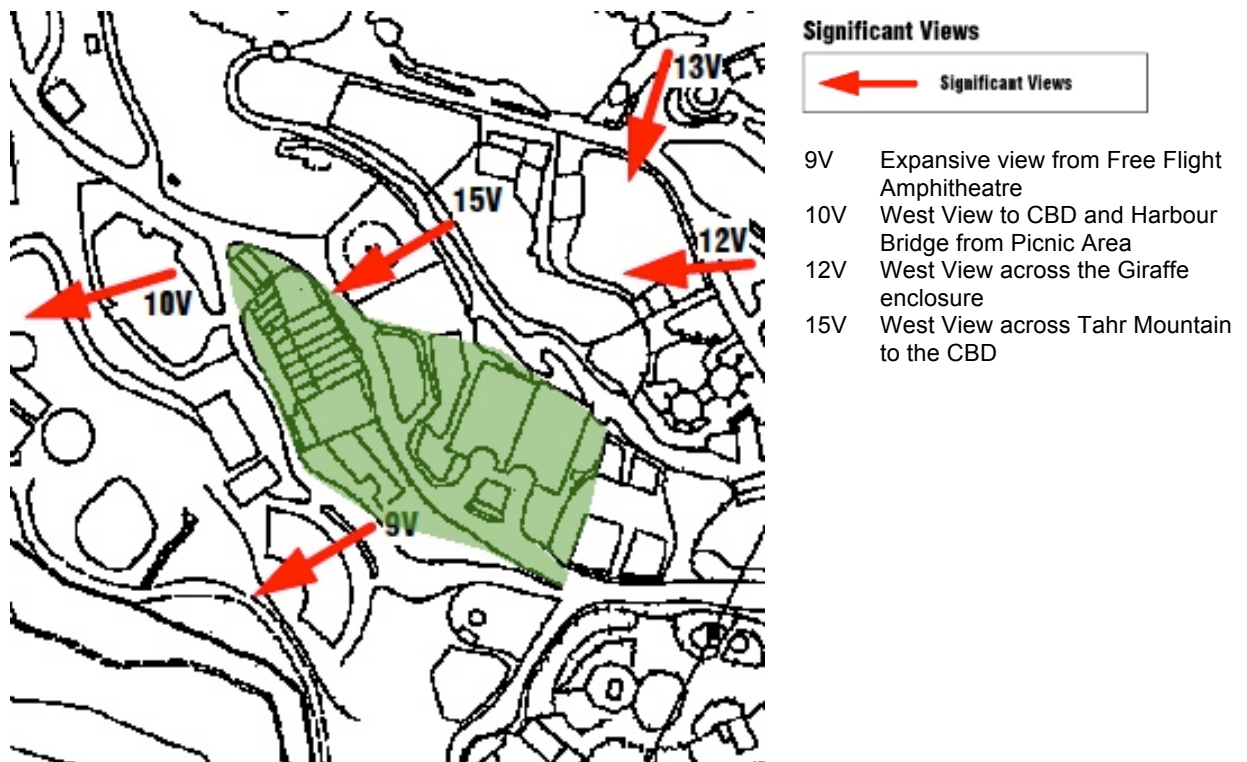


Figure 2.30 Extract of the map in the Conservation Management Strategy showing significant views in the vicinity of the site. Source: Godden Mackay Logan.

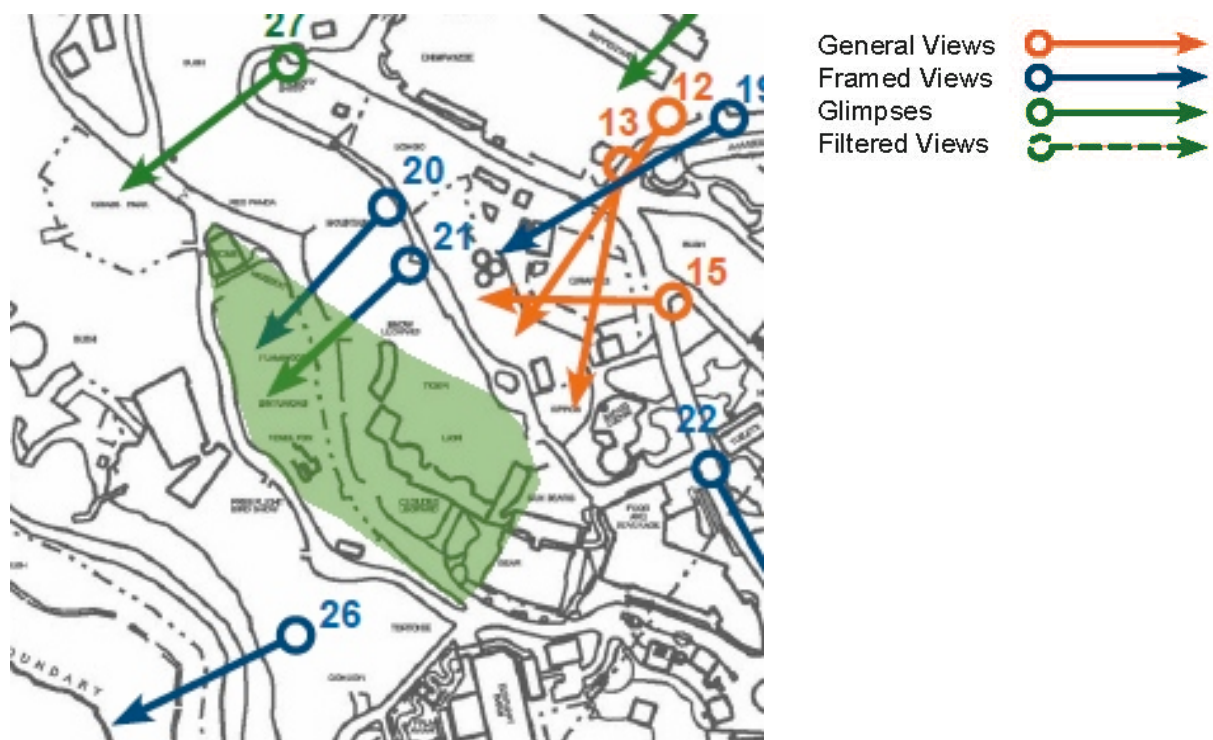


Figure 2.30 Extract of the map in the Landscape Management Plan showing significant views in the vicinity of the site. Source: Design 5 & Others

2.3.3 Buildings

Within the study are buildings that are part of animal enclosures that have been identified as heritage items. These are discussed under animal enclosures following.

2.3.4 Other Built Elements

The early built elements of the Zoo were designed to enhance a visitor's experience including staircases, balustrades, seats and sandstone walls. Some of these features remain within the subject precinct and provide both a physical and visual link to the other historic areas within the Zoo.

Within the study area is part of the original network of pathways (**99L**) from the original phase of zoo landscaping in 1913-1916. This section of roadway was below the lion and tiger exhibits and was built along the contour. It was extended when three new cats exhibits were built in 1925 but did not link to other paths. It was extended in the 1930s to Tahr Mountain and wild dog exhibits on the other side of the road. The road became known as Dog Road because of these exhibits. Sandstone retaining walls (**63L**) dating probably from the 1940s are on the south side of the exhibits forming level areas within the exhibits and the walls are probably associated with the expansion and construction of the native dog exhibits. By 1943 there was a stair (now removed), in the vicinity of Tahr Mountain, linking Dog Road to the upper level pathway known as Waterhole Path - the earlier upper level path which was shown on the 1916 plan.

At this time there was no lower level road below the wild dog exhibits. This area was a picnic area and not developed for exhibits until the early 1950s. The road was probably extended to the lower level at this time. It did not continue to the west. The rendered stone wall (**85L**) is believed to date from the early 1950s when the area below the early pathway was developed for the Pere Davids deer (arrived in 1949) and for an Ape enclosure, Goura pigeons and pumas (erected during 1953). This road was linked to Dog Road in the late 1960s or early 1970s and to do this a cutting had to be made in the natural rock face. When the amphitheatre was built below this road in 1998 it became known as Birdshow Road.



Figure 2.31 Birdshow Road from the west with the cutting on the left. Source: Jean Rice



Figure 2.32 Dog Road from the east. Source: Jean Rice



Figure 2.33 Path above cutting on Birdshow Road. Informal stone garden edging on left.



Figure 2.34 Formal stone retaining wall 63L opposite the amphitheatre across Birdshow Road.



Figure 2.35 West end of wall 63L showing stormwater pipe and damage caused by fig tree roots.

2.3.5 Animal Enclosures

The designer's original goal at Taronga was to display the many different animals in naturalistic enclosures and exhibits. This was achieved by making use of the natural topography of the site and, in particular, the exposed sandstone rock ledges and rock faces as backdrops to the enclosures, such as could be found in the original Tiger and Lion pits.

Since the opening of Taronga the focus of animal collections has gone from a menagerie, where the animals were displayed primarily for the amusement of visitors, to a focus on the animals' well-being, to the more recent educational approach as is evident within the recent Great Southern Oceans Precinct and Lemur exhibit.

The site of the proposal includes some listed animal enclosures: the Upper Bear Pit (**52B**) which was an original exhibit, dating from 1915-16 (altered extensively in 1999), the Cats of Asia Exhibits (**62B**), built in stages in 1935 and 1939, the Pygmy Hippo Enclosure (**98B**) probably built in 1939 in association with the second big cats pit and stone features within the Snow Leopard exhibit (**101B**) which was built over the natural and artificial rock features in the 1989.

The Upper Bear Pit (**52B**) was originally the Lion and Tiger Exhibits built in 1916. The exhibits were viewed from below across a moat. They were surrounded by natural and mock rock on three sides. Dens and keepers facilities were built into the hillside on the upper side of the exhibits. By the 1970s the exhibit was used for bears but was little altered. In 1999 the exhibit was altered extensively with the removal of the division between the two pits and a tunnel that was concealed in the dividing mock rock wall. Only the moats and an area of mock rock to the right (east) of the exhibit remained unaltered. New mock rock walls were constructed and a viewing cave at the left (west). The floor of the exhibit was altered from flat to sloping or stepping up towards the rear (north) and new low retaining walls were built across the slope. Today the extent of the exhibit and the viewing arrangement over the moat is similar to the original. The three cats exhibits built to the west of exhibit 52B have all been demolished.



Figure 2.36 Upper Bear Pit (now Sun Bear). The mock rock in this photo was built in 1999. Source: Jean Rice



Figure 2.37 Part of the Upper Bear Pit believed to be original. The moat is at the front. Source: Jean Rice

The Cats of Asia Exhibits (**62B**) were built in stages in 1935 and 1939 – first the Lion pit and then the Tiger pit to the west. They were built above and north of three, now demolished, cats exhibits. Both pits had viewing from above from walkways constructed over arcaded 'caves' in the animal enclosures. The Lion enclosure was larger and had a mock rock mountain in the centre and there are many historical photos of Lions laying on this rock. There was also a concrete map of Australia on the enclosure floor. The Tiger pit was smaller but deeper with similar arcades but no central rock. The exhibits remained intact until about 1980 after when they were altered several times. The Tiger exhibit had a back of house structure added above part of the pit on the southern side and the arcade on the west wall removed. In 1991 the current curved low level viewing window was built with dens above it and the entrance was changed from Waterhole Path above to Dog Road below.

The Lion exhibit was altered at the same time with viewing windows from the east and closure of the upper level walkways. At this time the exhibit is shown as having a mound at the centre. It is not known if this covers the mock rock mountain or if the mountain was removed. A couple of years later a similar curved low level viewing window was added to the Lion pit and dens and keepers facilities extended above. The Lion viewing window is at a higher level than the Tiger viewing window reflecting the original

differing ground levels of these exhibits. It is not clear what, if any, of the original structures remain. The line of the outer walls matches the original configuration but there is little remaining of the high relief mock rock visible in early photos. The caves in the north wall of the Lion pit may be original but the mock rock on each side of the viewing window is less likely to be because of the extensive construction work over it. Further physical investigation of the site is needed to establish this.



Figure 2.38 View from Dog Road of the Lion viewing window and dens and keepers areas above. Source: Jean Rice



Figure 2.39 Mock rock caves on the east wall of the Lion exhibit. The plain upper brickwork may be where the 1991 viewing windows were. Source: Jean Rice

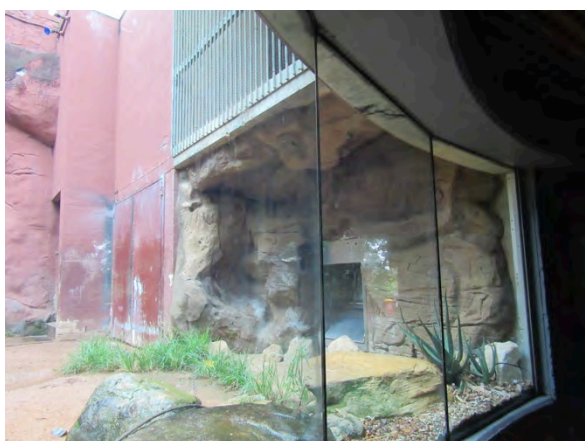


Figure 2.40 Mock rock to the right of the Lion viewing window. The window, masonry wall and dens over were built in 1992-93 so the mock rock may date from then. Source: Jean Rice



Figure 2.41 Northwest corner of the Lion exhibit. The stepped wall arrowed is where the arcade was removed in 1992-93. Source: Jean Rice



Figure 2.42 The west wall of the tiger exhibit. This was shown to be retained in 1991 drawings but does not have a mock rock finish. Source: Jean Rice



Figure 2.43 East wall of the Tiger exhibit. Corrugated iron has been added at the top of the wall. Source: Jean Rice

The c1939 Pygmy Hippo den (**98B**) is above the Tiger enclosure facing Waterhole Road. It is a mock rock structure which has recently been incorporated into a new Fennec Fox exhibit. The Fennec foxes were previously in an enclosure in the area which is proposed to be the new Sumatran tiger exhibit. The mock rock shelter remains intact and unaltered.



Figure 2.44 The former Pygmy Hippo mock rock den 98(B), now part of the Fennec fox exhibit. Source: Jean Rice



Figure 2.45 View of the new Fennec fox exhibit. Source: Jean Rice

The Snow Leopard exhibit features a shelter, which is a modern steel structure built in 1989. It has a curved steel frame, which cantilevers over the exhibit and also follows the curve of the path. The roof is of curved corrugated steel. The enclosure itself is a mesh tension structure suspended over the natural and artificial rock features (**101B**). The natural gully was used to create a 'stream' and 'waterfall' which runs with recirculating water but gives a natural appearance. The low brick walls, brick paving, bridge and Himalayan themed plantings were part of the themed exhibit. The dens are simple brick buildings adjacent the Tigers exhibit and, in part, existed prior to the construction of the 1989 steel enclosure.



Figure 2.46 2015 view of the 1989 Snow Leopard enclosure. Source: Jean Rice



Figure 2.47 View of the Dhole exhibit from Dog Road. The large fig is to be in the centre of one of the new enclosures. Source: Jean Rice

There are several other exhibits in the area that are not listed. They are a series of small caged enclosures on the south side of Dog Road primarily built for various wild dog species displays. They each have mock rock shelters or dens along the south edge of the displays. These form an irregular row generally set back from the edge of the sandstone rock shelf with an informal path. There is a chain wire fence along the outer edge of the sandstone rock shelf. One exhibit den is built up to the edge of the sandstone immediately over the Aboriginal hand stencil site. It and many of the other shelters are disused. The side walls of that exhibit den have been roughly broken open to allow access between the paths on each side. This shelter is in poor condition with large cracks also caused by fig tree growth and as the floor is at a higher level water is channelled from the adjacent paths over the rock shelf at this point. The eastmost exhibit has most recently been used for the Fennec foxes recently relocated to the Pygmy Hippo shelter. The westmost of these exhibits is currently used for the Meerkats and these are soon to be moved to a new location. The front of these exhibits are generally pipe frames with black

chain wire mesh with low concrete or brick walls. The path has been altered opposite the Snow Leopard exhibit to be wider and with two levels separated by a low brick kerb.

The westmost exhibit in this area is a bird aviary that is a simple rectangular structure with a rear brick wall with a rendered mock rock finish, pipe frame and black chain mesh cladding. The front is set back from the road making a seating area and there are adjacent decorative tree plantings. Opposite this is Tahr Mountain which features a mock rock central 'mountain'. It is enclosed by a low rendered brick fence with a chain wire fence above this with some brush fencing attached. A modern ramp and stairs provides equitable access from the Waterhole Path and other higher level roads.



Figure 2.48 The eastmost of the former wild dog enclosures occupied recently by the Fennec foxes. Source: Jean Rice



Figure 2.49 Typical rear view of the former wild dog enclosures showing the chain wire fence on the left, the informal path and the rear of the shelters on the right. Source: Jean Rice



Figure 2.50 The disused den over the Aboriginal site viewed from Birdshow Road. Source: Jean Rice



Figure 2.51 Rough openings made in the walls of the den over the Aboriginal site. Source: Jean Rice



Figure 2.52 Deteriorated ceiling of the den over the Aboriginal site. Source: Jean Rice



Figure 2.53 Crack between the wall and ceiling of the den over the Aboriginal site. Source: Jean Rice



Figure 2.54 Tahr Mountain and the modern ramp adjacent. Source: Jean Rice



Figure 2.55 Low masonry wall around Tahr Mountain. Source: Jean Rice



Figure 2.56 Bird Aviary and seating area from the north. Source: Jean Rice



Figure 2.57 Bird aviary from the west. Source: Jean Rice

2.3.6 Botanic Estate

Of particular importance to the cultural landscape of the Zoo is the botanic estate of ornamental, native and functional vegetation, which establishes the 'natural' visual appearance of the place, particularly when viewed from the harbour. Planted and remnant Australian species were used initially, particularly flowering species, side by side with ornamental floral plantings in rockeries. Some of these are listed on the s170 register.

From the late 1960s onwards there was a general emphasis on the revegetation of the entire Zoo site with native plants. Within the study area are a number of indigenous plantings such as the broad leaved paperbarks (**71L**) within the area that was originally the picnic ground but they are likely to date from the post war period as the area was not developed until then. They are evident in the 1962 aerial and so probably planted by c1950. They likely post date the aviary adjacent the eastmost tree as the tree is very close to the building. Similarly the firewheel tree (**175L**) and adjacent Lacebark (Pink Kurrajong) are both likely to be post war plantings as they are adjacent exhibits that were not built until then. The firewheel tree and lacebark are proposed to be removed. There are also a number of fig trees however these are also post war plantings or are recent self sown / wildings.

Other plantings are exotic species such as the Bhutan Cypress (**242L**) that relate to the original Himalayan habitat of the Snow Leopard. The maples (**244L**) are also associated with the Snow Leopard exhibit and also Hall's Crabapple (a Chinese apple known as *chui si hai tan*) (**283L**). These are not rare species but are associated with the exhibit which is proposed to be removed. The maples are proposed to be transplanted. Within the current tiger exhibit is bamboo (**254L**), a typically Asian plant, which dates from the reworking of this carnivora pit in the early 1990s.

Other exotic planting, identified as heritage significant, within the study area includes an African Tulip Tree (**251L**) near the former Pygmy Hippo exhibit at the upper level. In the former wild dog exhibits are an Oriental Raisin Tree (**268L**) which is in poor health and proposed to be removed and a scarlet Thunbergia (**267L**), originally found in Burma, India and Malaya, in the Dhole (Asiatic Wild Dog) exhibit growing over the chain wire and also proposed to be removed. This has been previously cut back to the ground and has grown again.

No rationale for the choice of plantings has been determined, beyond the matching of animals and plants from the same habitat that characterises the more recent exhibits. Plantings such as the Firewheel tree and Lacebark were fashionable in the immediate post WW2 period.

A 1962 aerial shows much less vegetation in this area. Since 1962 the area has become heavily vegetated with self seeded fig trees colonising the rock shelves and walls. In the garden bed between the Birdshow Road and rock shelves and in the rock features themselves are a series of self seeded fig trees. One is larger and evident in the 1962 aerial but the others have grown since then. Several have roots that go from the top of the rock shelves to the garden bed forming sculptural forms. The roots are also growing into fissures in the natural stonework and joints in the structures including the retaining wall.



Figure 2.58 1962 aerial photo showing the Aboriginal site and adjacent fig arrowed and the large fig to the left in the Dhole exhibit. Source: Jean Rice

3.0 Heritage Significance

As stated in the Conservation Strategy, Taronga Zoo is a significant place for the state of New South Wales. The primary significance of Taronga lies in its unique and powerful cultural landscape; the place's ability to evidence the evolution of zoological approaches throughout the twentieth century at Taronga Zoo and in an international context; its continuity of use as a zoo of world-standing; its historic associations with earlier zoos in Australia and Carl Hagenbeck's zoo in Germany; and the iconic sense of place it has for the people of NSW and Sydney in particular.

The significance of Taronga Zoo as a whole is articulated in the Conservation Strategy as follows:

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 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.

3.1 Individual Elements of Significance in or in the vicinity of the Precinct

In addition to the overall values of the place, there are specific values attached to individual elements which are recognised in the Section 170 Heritage and Conservation register.

The whole of the Taronga zoo site, along with over 200 heritage items (including buildings, animal enclosures, landscape items and movable heritage items) are included on the Heritage and Conservation Register for Taronga Zoo, prepared in accordance with Section 170 of the *Heritage Act 1977* (NSW).

The elements of significance within and in the vicinity of the subject precinct are shown on the map below and listed in the table following. The levels of significance are identified in the charts in Section 4, and are either State or Local.

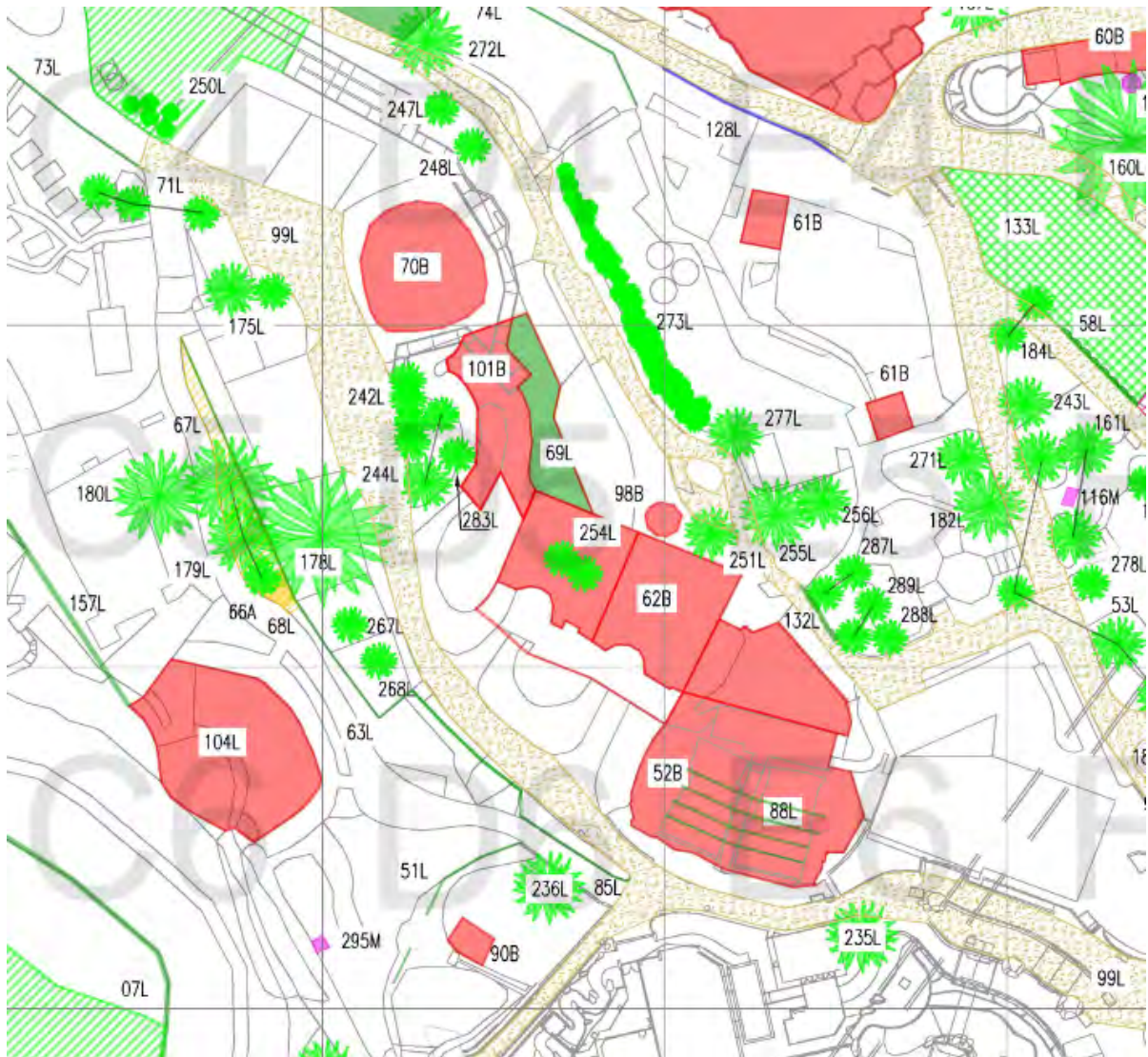


Figure 3.1 Heritage Items in the Theatre Precinct and in the vicinity. Note this plan is diagrammatic only and does not accurately show individual structures. Source: Extract from s170 heritage register map.

Item #	Items in the Site	Map ref.
52B	Upper Bear Pits	E6
62B	Cats of Asia	D5-E5
63L	Sandstone Retaining Wall	D6
66A	Aboriginal Hand Stencil	C5
67L	Stone Carvings	C5
68L	Rock Faces	D6
69L	Natural Rock Benches	D5
71L	Broad-leaved paperbarks (approval obtained to remove from s170)	C4
85L	Rendered Stone Wall	D6
88L	Rockwork	E6
98B	Pygmy Hippo Enclosure	D5-E5
99L	Pathways, original pathway layout	All
101B	Snow Leopard, Stone Features	D5
175L	Firewheel Tree	C4
178L	Fig Tree	C5-D5
179L	Small Leaved Fig Tree (approval obtained to remove from s170)	C5
242L	Bhutan Cypress	D5
244L	Maple	D5
251L	African Tulip Tree	E5
254L	Bamboo	D5
267L	Climber	D5
268L	Japanese Raisin Tree	D6
283L	Hall's Crabapple	D5

Item #	Items in the Vicinity	Map ref.
51L	Sandstone Retaining Wall	D6
61B	Giraffe Houses	E4-E5
70B	Tahr Mountain	D4
73L	Low Retaining Wall	B3-C4
104L	Bird Free Flight Amphitheatre	C6
132L	Rendered masonry wall	E5
180L	Fig Tree	C5
236L	Brush Box	D6
250L	Christmas Bush	C4
255L	Date Palm	E5
256L	Date Palm	E5
273L	Sweet Acacia	D4-E5
277L	Pygmy Date Palm	E5
287L	Aloes	E5
288L	Kalanchoe	E5
289L	Aloes	E5

3.2 Historical Archaeological values within the Precinct



The survival of archaeological remains at Taronga Zoo is difficult to predict. The Taronga Zoo Archaeological Management Plan (AMP), November 2002, provides a detailed discussion of the nature and likelihood of archaeological features.

The AMP identified that within the subject precinct there is evidence of the original path layout and in the generally throughout the Zoo there may be evidence of changing path layout (to access previous exhibits).

The Historical Archaeological Management Zones within the site of the proposed Sumatran Tiger exhibit are listed below and shown on the following plan extracted from the AMP:

Zone B Areas of extant original zoo path layout

Zone D Areas where there is no potential for subsurface archaeological evidence to remain


	<p>Historical Archaeological Management Zones</p> <p>Zone A</p> <p>Unassessed area outside Zoo boundary wall</p> <p>Zone B</p> <p>Areas of extant original Zoo path layout</p> <p>Zone C</p> <p>Areas where subsurface evidence of previous European activity has potential to remain</p> <p>Zone D</p> <p>Areas where there is no potential for subsurface archaeological evidence to remain</p> 
<p>Historical Archaeological Features</p>	
<p>Zone B (Zone 2) (Original path):</p> <p>Archaeological features identified in this zone should, where possible be retained in situ. Development plans should be designed to retain the features of this zone in their original condition. If the proposed development must destroy the features in this zone then provision needs to be made for an archaeological investigation, which may include monitoring, test or full excavation, prior to the commencement of work.</p>	<p>High archaeological sensitivity / potential and medium research potential.</p> <p>Avoid disturbance. Any excavation requires archaeological supervision in accordance with an excavation permit or exemption.</p>
<p>Zone D (Zone 4) (No potential):</p> <p>The advice of materials conservator may need to be sought if archaeological features are exposed. If uncovered, archaeological features would required archival recording and should be located on the site plan.</p>	<p>No archaeological sensitivity / potential.</p> <p>If excavation or disturbance exposes and archaeological feature call an archaeologist.</p>

3.3 Indigenous Values within the Precinct





The 2004 AMP notes that there is one recorded Aboriginal site within the boundaries of Taronga Zoo, the Aboriginal hand stencils under a sandstone overhang and this is very close to the proposed new Sumatran tiger exhibit. In addition there is a rock shelter with a midden at Athol Bay (also with stencils) and a second midden at Little Sirius Cove. These sites are outside the Zoo but indicate that shellfish was collected and eaten along the foreshore. To date no midden sites have been discovered further up the slope.





The Aboriginal Archaeological Management Zones within the site of the proposed Sumatran Tiger exhibit are listed below and shown on the following plan extracted from the AMP:






- Zone 1 Identified art site
- Zone 3 Rock surfaces and areas unmodified by European development
- Zone 4 Areas heavily modified by European development
- Zone 5 Areas that have previously excavated down to bedrock or culturally sterile soil profiles






	<p>Aboriginal Archaeological Management Zones</p> <p>Zone 1 Identified art site</p> <p>Zone 2 Unassessed area outside Zoo boundary wall</p> <p>Zone 3 Rock surfaces unmodified by European development Areas of original bushland unmodified by European development</p> <p>Zone 4 Areas heavily modified by European development</p> <p>Zone 5 Areas which have previously been excavated down to bedrock, or culturally sterile soil profiles</p>
<p>Aboriginal Archaeological Features</p> <p>There are five Aboriginal Archaeological Zones in Taronga Zoo four of which occur in the vicinity of the proposal</p>	
<p>Zone 1: Identified Art Site</p> <p>Very high archaeological sensitivity / potential.</p>	<p>Conserve site and avoid works above. If required assess stability of rock shelf, no modification prior to consultation MLALC, AHIP Permit and consent required.</p>
<p>Zone 3: Sandstone ridges and ledges not modified by European development.</p> <p>High archaeological sensitivity / potential.</p> <p>Potential for concealed intact sites.</p>	<p>If subsurface disturbance proposed obtain "preliminary research permit", test trench, MLALC to monitor. If relic found AHIP required.</p>
<p>Zone 4: Areas heavily modified by European development but not excavated to bedrock.</p> <p>Low archaeological sensitivity / potential.</p>	<p>Brief contractors if subsurface disturbance proposed and if relics exposed cease work and report to MLALC and NPWS and act as for Zone 3.</p>
<p>Zone 5: Areas previously excavated to bedrock.</p> <p>No archaeological sensitivity / potential.</p> <p>Culturally sterile.</p>	<p>No further Aboriginal archaeological input required. Act as for Zone 3 if any relic is found (unlikely).</p>




3.4 Table of Heritage Items & Items in the Vicinity (as identified in the S170 Register)



Heritage Items within the site			
Item / Significance	Date/Original	Image	Comment
52B Upper Bear Pits Local	Original but modified 1915-16		<p>Concrete mock rock formation modified extensively 1999 / 2000 for Kodiak bears. It is believed that only the section in this photo at the southeast corner and the moats are original</p> <p>See also 88L</p>
62B Cats of Asia Local	1923-39		Concrete mock rock formation. Most of the other fabric is altered but these shelters may be original. Historic images of this east side of the enclosure are not clear enough to establish with certainty if these are original.
63L Sandstone Retaining Wall Local	1913-1916		<p>Ashlar block retaining wall opposite Bird show Partially located behind bamboo plantings.</p> <p>The eastern end of the wall is built above a natural rock shelf. Over the rock shelf the wall changes to a mock rock rendered wall.</p>
66A Aboriginal Hand Stencil NPWS Site #45-6-1959	Predates the site's establishment as a zoo		<p>The shallow small, overhang that contains the hand stencils is part of a larger, semi-quarried, sandstone face opposite the Bird Show. Only two remain of seven or eight white hand stencils originally noted on the rear wall. Refer to AMP.</p>

Heritage Items within the site			
Item / Significance	Date/Original	Image	Comment
67L Stone Carvings Local	c1965 and 1981		Stone Carvings by M. Leslie. This modern artwork has hand stencils and is an acknowledgment of the presence of the Aboriginal site in the vicinity. Refer to AMP.
68L Rock Faces Local	Predate Zoo but cutting made late 1960s / early 1970s		Rock faces at western roadway between bird show and Centennial picnic grounds. The rock face is a cutting, probably made for the current road in the late 1960s.
69L Natural Rock Benches Local	Predate Zoo		At Snow Leopard Exhibit. The area was part of a garden until it became a small cats enclosure in the 1970s. See also 101B
71L Broad-leafed paperbarks Local	Unknown – possibly Le Souef or slightly later		<p><i>Melaleuca quinquenervia</i> X3 (4) Group of three (four or more) mature trees at the eastern end of the Roar and Snore (formerly known as Centenary Lawn Picnic ground) and behind the Meerkat exhibit.</p> <p>Two trees proposed for removal and approved to be removed from S170 register.</p>



Heritage Items within the site			
Item / Significance	Date/Original	Image	Comment
82A Taronga Zoo – Greater State	From 1912		
85L Rendered Stone Wall Local	Render 1930s, sandstone wall may be older [this date inconsistent with recent research]		Rendered stone wall opposite Aldabra Tortoise Enclosure. This was probably built in the late 1940s when this areas was developed.
88L Rockwork Local	Predates Zoo but modified 1999 / 2000		In Kodiak bear pits. It is difficult to distinguish the natural rock from the mock rock which was added in 1915 / 1916. Mock rock is now mostly from 1999 including the walls running across the enclosure in the photograph. See also 52B
98B Pygmy Hippo Enclosure Local	1930s		Date not confirmed. Not in 1930 aerial but in 1943 aerial. Shown as echidnas in 1956 but not shown on earlier guides. Possibly built in conjunction with tiger pit in 1939. Altered in 2015 as Fennec Fox Enclosure.
99L Original Early Paths State	1913-14		Early pathway alignment dating from pre-1940 Layout, including main paths following contours, paths and stairs linking levels, original balustrades and concrete kerb and gutters.






Heritage Items within the site			
Item / Significance	Date/Original	Image	Comment
101B Snow Leopard, Stone Features Local	Altered / enhanced in 1990		See also 69L for rock shelves and earlier rockwork
175L Firewheel Tree <i>Stenocarpus sinuatus</i> Local	Unknown – possibly post WWII		Two trees next to the Meerkat exhibit (a young laceback is close to them). One large tree is evident in the 1962 aerial photos.
178L Moreton Bay Fig Tree <i>Ficus macrophylla</i> Local	Possibly 1960s to early 1970s		One mature tree within the Dhole exhibit
179L Small Leaved Fig Tree <i>Ficus obliqua</i> Local	Post WWII for the oldest tree		Group at 'hand stencil' site. Large tree with several younger trees around it. The group are producing a spectacular sculpture over the rock shelf and walling. Proposed for lopping / removal and approved to remove from S170 register.
242L Bhutan Cypress Local	1990s		Group of recent plantings in front of the Snow Leopard exhibit Themed with Snow Leopard exhibit.




Heritage Items within the site			
Item / Significance	Date/Original	Image	Comment
244L Maple <i>Acer pentaphyllum</i> Local	Recent	No image in database	x2 Recent planting at Snow Leopard exhibit Three small specimens proposed to be relocated.
251L African Tulip Tree <i>Spathodea Campanulata</i> Local	Date		Adjacent Pygmy Hippo exhibit now converted for the Fennec fox.
254L Bamboo <i>Semiarundinarius fastuosa Variatus</i> Local	Recent		Within the Sumatran tiger exhibit. This pit was originally bare and the bamboo was probably planted when the pit was altered in 1991.
267L Climber <i>Thunbergia coccinea</i> Local	Recent		A woody climber from lower Himalayas in Dhole exhibit. Previously cut back and regrew. Exists also at Elephant temple






Heritage Items within the site			
Item / Significance	Date/Original	Image	Comment
268L Japanese Raisin Tree <i>Hovenia dulcis</i> Local	Unknown		Maturing tree within the former Fennec Fox exhibit.
283L Hall's Crabapple <i>Malus halliana</i> Local	1990s		At Snow Leopard exhibit.

END OF TABLE

Heritage Items in the Vicinity			
Item / Significance	Date/Original	Image	Comment
51L Sandstone retaining wall State /Local	Original 1913-1914		Buried beneath current garden bed behind Condor Aviary.
61L Giraffe Houses State	1923 and 1940		Refurbishment works to grotto house undertaken 2009.

Heritage Items in the Vicinity			
Item / Significance	Date/Original	Image	Comment
70B Tahr Mountain State	1932		Tahr Mountain – mock rock mountain structure built of concrete. Ground works undertaken 2007. Front wall of enclosure proposed to be slightly altered.
73L Low Retaining Wall Local	C1916-1926		Low retaining wall at Roar and Snore (formerly known as the Centenary Lawn Picnic ground)
104L Bird Free Flight Amphitheatre Local	1998		Recent structure. No change proposed.
132L Rendered Masonry Wall Local	c1910s-1930s		Roughly rendered masonry wall above the site with rustic stone cresting, west of former Safari Lodge, now Parents' Room.
180L Fig Tree Ficus nymphaeifolia ? Local	Probably post 1951		A mature tree opposite the 'hand stencil' fig tree group. Superficially like the Ficus Macrophylla but appears to be a different species.

Heritage Items in the Vicinity			
Item / Significance	Date/Original	Image	Comment
236L Brush Box <i>Lophostemon confertus</i> Local	Unknown		Mature tree north of the Aldabran Tortoise exhibit. Tree structure suggests an old plant.
250L Christmas Bush <i>Ceratopetalum gummiferum</i> Local	Part of early indigenous vegetation community that predates Zoo.	No photo Part of bushland, not evident except when in flower.	Group of about 10 plants around the former Red Panda exhibit and west of Tahr Mountain.
255L Date Palm Local	Date		Phoenix Canariensis and Roebelenii
256L Date Palm Local	Date		Removed in 2015.

Heritage Items in the Vicinity			
Item / Significance	Date/Original	Image	Comment
273L Sweet Acacia <i>Vachellia farnesiana</i> Local	Recent		Pantropical species shrubs planted around the Rhino enclosure.
277L Pygmy Date Palm <i>Phoenix roebelenii</i> Local	1980s relocation to Zoo		Mature plant at eastern end of Rhino exhibit (ex-RBG plant?).
287L Aloes Local	Not known Recent		Pony tail palm <i>Beaucarnea recurvata</i> Moved from monkey pits.
288L Kalanchoe Local	Not known Recent		
289L Aloes Local	Not known Recent		Dracena Moved from monkey pits.

3.5 Heritage Statutory Context

EP&A Act

The project is considered to be State Significant Development (SSD) under Part 4 of the Environmental Planning & Assessment (EP&A) Act. Information about State Significant Development is further set out in the State and Regional Development SEPP dated 1 October 2011. The Minister for Planning and Infrastructure may declare projects to the State Significant provided that advice has been sought from the Planning Assessment Commission.

This project has been submitted as an SSD and the Secretary's Environmental Assessment Requirements (SEARS) have been provided, dated 14 January 2014 (updated 23 January 2015) as follows for heritage matters:

Heritage

Prepare a statement of heritage impact which identifies:

- all heritage items (state and local) including built heritage, landscapes and archaeology, and detailed mapping of these items, and why the items and site(s) are of heritage significance; and
- what impact the proposed works will have on their significance.

Address Aboriginal cultural heritage impacts of the proposal, including:

- identifying and describing the tangible and intangible Aboriginal cultural heritage values that exist across the area affected by the development. This may require the need for surface survey and test excavation.
- where Aboriginal cultural heritage values are identified, consultation with Aboriginal people who have a cultural association with the land must be undertaken and documented in the EIS. Additionally, the significance of the cultural heritage values for Aboriginal people who have a cultural association with the land must be identified and documented in the EIS.
- impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must demonstrate attempts to avoid impacts upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measure proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.²³

Prepare an archaeological assessment of the likely impacts of the proposal on any Aboriginal cultural heritage, European cultural heritage and other archaeological items and outline proposed mitigation and conservation measures.

This report identifies all heritage items and the impact of works on them.

The previously prepared Archaeological Management Plan (AMP) (provided separately) identifies and describes Aboriginal cultural heritage values across the Zoo and extracts of this, relevant to the site of this proposal, are included in this Heritage Impact Statement. The Archaeological Management Plan identified Aboriginal cultural heritage values and consulted with Aboriginal people who have a cultural association. The records of this are in the AMP.

An identified Aboriginal art site is adjacent the site of the proposal. An AHIP has been sought for this site in addition to the SSD proposal as it is adjacent to trees that are to be removed in an early works package – not part of the SSD proposal. The site has been considered in detail in an Aboriginal Archaeological and Cultural Heritage Assessment report prepared by Dominic Steele Consulting Archaeology (provided separately). This included consultation with Aboriginal people and this is included in the AHIP report. Potential impacts of the tree removal were considered in the AHIP and mitigating measures proposed. These measures and engineering advice sought at the same time (and included in the AHIP) were used to guide the SSD proposed development to avoid impact and to conserve and protect the site. These are detailed later in this report.

This HIS includes an archaeological assessment of the likely impacts based on the AMP and outlines mitigation and conservation measures.

²³ SEARS, dated 14 January 2014 (updated 23 January 2015)

NSW Heritage Act 1977

Taronga Zoo is not presently listed on the State Heritage Register, however the site clearly meets the relevant criteria. A s170 register report was prepared for the Taronga Zoo in 1998 and has been managed by the Taronga Conservation Society Australia (TCSA) since then with items added as identified in subsequent studies.

The Heritage Office endorsed a Conservation Strategy, 2002, which provides an integrated, multi-disciplinary framework for the management of the heritage resources at Taronga. The NSW Heritage Office endorsed a Conservation Management Strategy and an Archaeological Management Plan (2004) to provide management principles and implementation strategies for the site's Aboriginal and historical archaeological resources.

In accordance with the CMS, a Landscape Management Plan was prepared by Design 5 Architects in 2006 which further identified the site's significant trees, landscape elements and views. Together with this Heritage Impact Statement, these documents form the basis for the assessment of potential impacts arising from the subject proposal on the identified significance of individual heritage items and the site as a whole.

Section 170 Heritage and Conservation Register

The proposal involves the partial demolition and modification of items on the Section 170 Register, and development in the vicinity of a number of Section 170 heritage items requiring notice to be given to the Heritage Council of NSW. The items are listed in Section 3.1 of this report and set out in detail in the table in Section 3.5 and listed below. The OEH Heritage Division has already been notified and acknowledged the intention to remove some s170 items in part as part of the early works package. These are two of a group of four paperbarks (item 71L) and a group of figs (item 179L).

Archaeological Relics

The Heritage Act 1977 affords statutory protection to 'relics' that form part of archaeological deposits. Sections 139-145 of the Act prevent excavation of a relic, except in accordance with a gazetted exemption or an excavation permit issued by the Heritage Council of NSW.

Within the subject area is a part of the original path network, which has been identified in the Archaeological Management Plan as Zone 2 and as being a zone of high sensitivity. The AMP identifies that the original path network requires ongoing management. Research for this project has identified more clearly the date of different sections of the path in the vicinity of the site.

In Zone 2 disturbance should be avoided and, where possible, original paths and layouts should be retained. Any subsurface disturbance should be subject to archaeological monitoring, test or full excavation (in accordance with an excavation permit issued under Section 60 or Section 140 of the NSW Heritage Act or a gazetted exemption).

Mosman Local Environmental Plan

Taronga Zoo is identified an Item of Local Environmental Heritage on Schedule 5 of the Mosman LEP.

Mosman Taronga Zoo (including landscape, bus shelter, office, upper and lower entrance gates, original Elephant House, Birds of Prey Aviary and floral clock). Bradleys Head Road, Lot 22, DP 843294 Local I34

The Heritage conservation objectives are

- (a) to conserve the environmental heritage of Mosman,
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
- (c) to conserve archaeological sites,
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

The requirements for consent

Development consent is required for any of the following:

- (a) 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) a heritage item,

- (ii) an Aboriginal object,
- (iii) a building, work, relic or tree within a heritage conservation area,
- (b) 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,

None of the elements in the vicinity are individually identified in the Mosman LEP 2012 Schedule of items of Environmental Heritage (Schedule 5) however the overall landscape is listed. Development Consent is therefore required on the basis of heritage listing.

3.6 Constraints and Opportunities

Operational and Zoological Requirements of the Zoo

The upgrading of Taronga Zoo is consistent with its historical values as a place that has continued to evolve the presentation of its animals over the twentieth-century to emphasise the educational and conservation role of the Zoo.

The upgrade of Taronga Zoo as set out in the Masterplan has achieved a balance between the cultural heritage conservation objectives; the requirements for the physical well being of the animals and their keepers; and visitor expectations of the place, to support the economic well-being of the Zoo and maintain Taronga's international reputation as a world-class zoo.

Animals

While it is recognised that the continued use of an exhibit for its original purpose is most desirable, the size and configuration of Taronga's exhibits, has created a number of redundant resources across the Zoo site. Improved standards for care of animals means that some exhibits are no longer suitable for the animals they were originally intended to house. TCSA now also has the capacity to accommodate animals and Western Plains Zoo in a more suitable environment than at Taronga. TSCA has also refocused on animal conservation in the wild and is linking its displays and scientific work to animal conservation, particularly of species successfully being bred at Taronga.

Physical Assets

The design of the Zoo's animal exhibits remains a legacy of the place's changing zoological ideology and approach over the past century.

The construction materials and detailing at Taronga have also created a unifying character to the place, particularly use of stone and 'mock rock'. Considering its age, the mock rock at the Zoo is in good condition though it is subject to concrete cancer where the reinforcing is mild steel. The use of mock rock can also be seen in the Blue Mountains, where shelters were erected to blend into the landscape.

Landscape Character

The Landscape Management Plan noted that it "is difficult to accurately distinguish whether the oldest site plantings are actually from the 1913-1916 period or from the next phase of site development" under the control of Le Soeuf.

The Landscape Management Plan also noted that:

There is a wide range of landscape character types apparent as numerous development layers and inherited indigenous rock forms and flora remnants are interwoven and juxtaposed throughout the site. The overall impression is of a rich and complex landscape where the upper canopy species still integrate the site with adjoining bushland areas, while the perennial focus of the Harbour is a continuing major component of the landscape setting.

Visitors

An objective of Taronga Zoo is to provide for a multi-sensory experience for the visitors, including the provision of a meaningful interpretation of the cultural significance of the place and individual items of heritage value to further enrich the visitors' appreciation of the Zoo.

The proposal departs from the traditional display of specimen animals in cages. The proposed display aims to provide an understanding of the location of the natural habitat of the animals, threats to them in the wild and aims portray the local environment is Sumatra where the tigers originate. Promotion of

tourism to Sumatra aims to provide an alternate economic base to reduce threats to the tigers coupled with a breeding program.

Current Opportunities for Redevelopment/ Conservation within the Subject Precinct

The Sumatran Tiger program at Taronga has been successful in breeding tigers. The success offers an opportunity to move to a modern ethical approach to animal display and to cease displaying animals such as the lions and leopards in inappropriate restricted conditions. There is an opportunity to relocate these animals to other sites and expand the enclosures for tigers. This offers an opportunity to improve keeper safety and animal handling. The current location of dens on the upper floor is inappropriate. Animals requiring veterinarian treatment have to be anaesthetised and moved from the upper level with forklifts. Keepers also cannot view the dens from the keepers offices leading to poorer animal supervision.

The large fig in the Dhole exhibit offers an opportunity to integrate it into the display creating an environment more similar to the tigers natural forest habitat.

The animal displayed in the exhibits between Dog Road and Birdshow Road can be easily relocated elsewhere within the site including the Meerkats, Fennec foxes, Tapir and Dhole (an Asian wild dog).

Detailed site assessment revealed that the Aboriginal site has been badly affected by self-seeded figs and water seepage. There is an opportunity in the project to limit damage by removing the figs – removal of which is proposed for vehicle access on Birdshow Road. There is also an opportunity to improve drainage and limit salt damp activity in the rock shelter.

There is an opportunity to conserve the ashlar stone retaining wall above Birdshow Road (63L). The wall is affected by small self-seeded figs and has been repointed in hard cement mortar in the past. There is an opportunity to poison the figs and repoint in compatible lime mortar and also to replace some stone that have fallen out of the base of the wall.

Conservation Policies

During the past decade of redevelopment the main issue for Taronga Zoo has been the inherent tension between the requirements of the place as a major progressive urban zoo, its cultural significance (including the surviving animal enclosures) and the implementation of the Masterplan vision.

The Masterplan implementation has shown that, undertaken within a framework of appropriate conservation principles, the site's cultural significance can be retained and enhanced. The Conservation Strategy set out a series of detailed conservation policy provisions.

In summary, the requirements of these provisions have been to:

- Recognise Taronga Zoo as a significant place for the state of New South Wales;
- Ensure the Zoo is conserved and adapted in accordance with the *Burra Charter* of Australia ICOMOS;
- Establish the requirements for further management plans and Heritage Impact Statements;
- Allow for adaptation of use of items no longer suitable for the original designed use;
- Facilitate retention, conservation, and adaption of items of Exceptional, High and Some significance;
- Enable relocation/demolition and alteration of some significant items;
- Provide appropriate procedures for new works;
- Provide for investigation of archaeological resources;
- Ensure records of significant items are made and placed in the Zoo archives; and
- Provide for the interpretation of the history and significance of the place.

The Conservation Strategy also included specific requirements for the individual heritage items identified throughout the Zoo. The policy provisions for the items within the subject precinct are reproduced in the table later in this HIS.

4.0 Heritage Impact Assessment

4.1 Project Documentation

Heritage advice has been provided during this project with input into the Concept Design (4/11/2014) and Schematic Design (LahzNimmo Architects 19 March 2015). This HIS refers to the Built Form and Urban Design Statement dated 22/04/2015 and the following drawings by LahzNimmo Architects.

		Date of Issue: D 13 15 23 29 01 M 04 04 04 04 05 Y 15 15 15 15 15									
Drawing No:	Title:	Revision:									
DA-001	LOCATION PLAN			A							
DA-002	EXISTING AND DEMOLITION SITE PLAN			A	B						
DA-003	EXISTING AND DEMOLITION LEVEL 1 + 2			A	B						
DA-004	PROPOSED SITE PLAN			A	B	C					
DA-005	PROPOSED ROOF PLAN			A	B	C					
DA-010	SITE SECTIONS			A							
DA-011	SITE SECTIONS			A							
DA-020	INDICATIVE MESH ENCLOSURE DETAILS					A					
DA-100	BOH / TIGER DENS - PLAN			A							
DA-101	BOH / TIGER DENS - SECTIONS			A							
DA-200	ENTRY BUILDING										
DA-300	INBOUND VIEWING 01			A							
DA-301	INBOUND VIEWING BRIDGE			A							
DA-400	MIDPOINT BUILDING - FLOOR PLAN	A	B	C							
DA-401	MIDPOINT BUILDING - ROOF PLAN	A	B	C							
DA-402	MIDPOINT BUILDING - SECTIONS	A	B	C							
DA-403	MIDPOINT BUILDING - SECTIONS	A	B	C							
DA-500	OUTBOUND VIEWING			A							
DA-600	EXIT BUILDING			A							

The HIS also refers to the Planting Report by Dale and Green Associates dated 20/04/2015, which details trees to be removed and retained.



Figure 4.1 Proposed Sumatran Tiger Exhibit – Schematic Design, Lahznimmo Architects. Note that the coloured extent of this drawing is greater than the site of the proposed works. A more detailed plan follows later in this report.

4.2 Project Description

The proposal is to create a new exhibit for the Sumatran Tigers modelled on Way Kambas, an Indonesian National Park (where tigers are currently in danger of extinction) and a local village. The exhibit concept is that visitors will go on a journey to the national park in Indonesia where they will see the tigers. The enclosures are mesh roof structures suspended from cables. The concept is explained in detail in the Lahznimmo statement.

The exhibit takes in an area previously containing the carnivora pits (three of which remain) and the more recent Snow Leopard exhibit. The two 1930s pits, the lion pit and the tiger pit, are to be converted into areas for the tigers that are not for public viewing (off exhibit external areas) and reduced in size. Three new large landscaped exhibit areas are to be created with a walkway between them. Two of the exhibits have ponds that will appear to be linked and crossed by visitors in a new bridge structure. A number of buildings are to be erected along the pathway, which are Sumatran in style and reflect the national park and village in the area where the tigers live in the wild. The initial building is to resemble the interior of an aircraft. These buildings contain displays related to this endangered tiger species and their former home.

Taronga Zoo currently has five Sumatran tigers and the organisation plays a role in the international conservation efforts to protect the species. The exhibit will also include information regarding the tiger habitat, much of which has been cleared for palm oil plantations.

The description of the exhibit concept below is from the Draft Concept report (2014). Note that the detailed scope has changed since then [noted in brackets] but the concept remains the same:

The flat topography in the exhibition areas will suit accessible travel around the exhibits. No significant excavation or fill is proposed within the exhibit areas [excavation now proposed in former Lion exhibit]. Existing services under the upper road that bisects the proposed exhibit areas are proposed to be relocated during the early works stage of the project and relocated along the lower Birdshow Rd [no longer proposed]. This road is proposed to become the main service road and is to be widened in parts (during early works) to accommodate service and emergency vehicles [tree removal only, widening no longer proposed]...

As Jon Coe noted in his April 2014 Concept Plan the site is ideal for representing a tropical rainforest because of its mature sub-tropical vegetation. A large mature fig tree forms the dramatic centre piece to the introductory Exhibit. Its wide canopy will define the extent of this exhibit, with an 8 metre distance prescribed to the Tiger enclosure that surrounds it...

Within the 'Village' area of the concept design (in-front of the existing Tiger exhibits) there is also significant vegetation the design team would like to maintain. This will need to be balanced against the desire for new building structures and circulation paths...

The original brief had assumed that the back-of-house facilities would undergo a refurbishment as part of the works. However detailed testing of this refurbishment had not been tested in terms of functionality and budget alongside a new build option. The current facilities have a number of maintenance, BCA and WH&S issues that would need to be addressed. Alongside this was the planned decommissioning of the existing Visitor viewing exhibition areas and Fennec Fox exhibit, to make way for the new Visitor experience and 'Village area', resulting in substantial demolition and refurbishment work...

The back-of-house and exhibit complex have undergone a number of staged additions and alterations over the last 25 years. The move from the more static exhibits to exhibits over larger areas, involving animal rotation through the day, is a significant change in operation. A refurbished facility has a number of inherent safety and efficiency issues to deal with in this regard.

The main pedestrian route in the proposal is along the level of the existing Dog Road however the road is altered to make a loop. All the existing structures on the site are demolished with the exception of part of the Carnivora dens. The Sun Bear and Tahr Mountain exhibits in the vicinity also remain. The area of the current Snow Leopard enclosure and enclosures on the south of Dog Road are proposed to be three new Sumatran tiger enclosures. They are proposed as mesh enclosed structures suspended from cables that run between pylons and incorporate existing landforms and trees. The intention is that visitors will feel they are walking through the jungle observing the tigers.

There are a series of new single storey structures proposed. The exhibit is to be entered through a building in the area of the existing "cave" west of the Sun Bear exhibit. This building (03) is to mimic the interior of an aircraft symbolising the journey to Sumatra by plane. Visitors will then enter a mock Sumatran village with storefronts. The path then leads through an entry gate modelled on the actual gate of Way Kambas national park.

The path will then wind through vegetation to tiger exhibit 1 (in the area of the former Snow leopard enclosure). The pond in this exhibit is separate but will appear to flow into the public area where visitors can cross in a covered bridge structure with the roof form of an Indonesian traditional building. The path then leads to a mock ranger station and the second tiger exhibit. The path then returns east to the third tiger exhibit which incorporates the large fig tree and has viewing windows with a "bridge" between with water apparently flowing under into the third tiger exhibit.

Exit is through a "supermarket" where there will be educational displays and information about the impact of the palm oil industry of the habitat of the tigers in the wild. Visitors will then re-join the existing Zoo paths at the point where they entered the exhibit, near the Sun Bear enclosure.

The modern keepers building is proposed to be demolished and replaced with single storey skillion roofed structures of the scale of the mock village buildings. The single storey layout provides improved animal handling and keeper safety but has a larger footprint. The proposal extends this structure into the existing Carnivora pits which are to become off-exhibit external areas (reduced in size by about one third)..

4.3 Impacts of Proposal on Taronga Zoo

The proposal is consistent with the ongoing use of the place as a Zoological garden which from the start included facilities for visitors enjoyment and education. It reflects recent concerns with the protection of animals and their habitats and the international activities of Taronga Zoo that provide assistance. The proposal will educate visitors about the Sumatran Tigers now endangered in the wild and convey a conservation message. It will also contribute to the survival of the Sumatran Tigers through the breeding program. The proposed enclosures provide improves conditions for the animals and improved safety for keepers consistent with the Zoo's WH&S responsibilities.

The proposal does not have negative impacts on the overall heritage significance of the Zoo though there are impacts on individual heritage items detailed in following sections of this report.

4.4 Impacts of Proposal on Heritage Items (as listed on the S170 Register)

See Table 4.1 at the end of this section that lists the heritage items within the subject precinct, items in the vicinity and views. These are listed, together with their significance ranking and conservation policy and impact assessment. The major negative heritage impacts are on the original paths (**99L**) lion and tiger pits (**62B**) and trees.

4.5 Compliance with Conservation Policies

The development proposal for the Sumatran Tiger Exhibit is generally consistent with the overall policies relating to conservation, cultural landscape values, adaptive re-use, access and interpretation contained within the 2002 Conservation Strategy for Taronga Zoo. See the detailed table at the end of this section and the paragraphs below. See 4.7 for comments re archaeology.

Natural Landforms

The Conservation Policy for the Landscape notes that the

...inherent natural values of the site, in particular (sandstone) landforms, water bodies, drainage systems and vegetation should be retained.

Whilst the overall cultural landscape is of State significance, the individual plantings have largely been assessed as being of local significance and relate to individual exhibits. The natural landforms are retained and incorporated into the proposed new exhibit. Some self seeded figs that are damaging the natural rock faces are proposed to be removed.

The proposal retains the inherent natural values of the site and integrates them into the displays.

Botanic Estate

The Conservation Policy for the Landscape also notes that the

Early ornamental plantings, including the tall, stately canopies of hoop pines and figs and the slightly later paperbarks, arising from the development of the place as a Zoological Garden should be retained.

The large fig in the Dhole exhibit is retained and most of the other trees within the area. Two of the four paperbarks are proposed to be removed as they restrict emergency vehicle access but they will be replaced by similar plantings in the vicinity. Other recent plantings proposed to be removed are associated with a themed exhibit, now removed, and so are now out of context and have reduced significance. Where possible, the maple, these will be relocated within the Zoo. Some small plants are in poor health and will not survive in the new exhibit nor survive relocation and there are generally other examples of the species elsewhere in the Zoo.

Views

There are no identified views within the study area. Views out across the harbour are from above or below the proposed new exhibit, as has been the case since the carnivora pits were first constructed.

The proposal has no impact on the identified views above and below the site.

4.6 Evaluation of Overall Heritage Impacts

The proposal retains the Sun Bear Pit, which is one of the original carnivore pits (although now extensively altered) and parts of the later two pits erected above in the 1930s but reduces them in size. There are positive and negative impacts.

A large fig tree is to be retained (178L). Other trees are proposed to be removed. These are generally post war and associated with particular exhibits. There are positive and minor negative impacts.

The Aboriginal Stencil site has already been impacted in the 1940s by the erection of a brick column to support the rock shelf above and damage by roots and water and associated salt activity. Specialist advice has been sought from Shreeji Consultants to determine the extent of set back required from the rock overhang to protect the Aboriginal site. This set back has been set at 3-3.6 m from the outer face of the cliff. There has been extensive collaboration during the design process and the proposal has been amended to avoid structural and construction impacts.

Evaluation of Positive Heritage Impacts

The positive aspects of the proposal are the retention of the large fig tree, rock shelves, Aboriginal site and ashlar stone retaining wall. The removal of self-seeded figs and drainage works part of the project will assist in the preservation of these items. Parts, about two thirds, of the surviving carnivora pits will be retained and continue to be used for the animals originally intended though these will be off exhibit areas. Other parts of the pits may be retained in dens.

Evaluation of Negative Heritage Impacts

The removal of the back of house of the carnivora pits is not a negative heritage impact, these areas were intended to be working areas and have already been extensively rebuilt or altered. The original dens reflect animal treatment regimes that are no longer undertaken and the 1990s dens are no longer considered adequate with the lack of viewing and animal handling difficulties. Improving the back of house areas will be beneficial for the animals that inhabit the enclosures and ensure keeper safety. The construction of the new dens in an area currently part of the lion and tiger pits will require excavation and loss of the overall volume of the pits and will have a negative heritage impact.

The proposal involves a new pedestrian movement pattern keeping in part the early path network but altering it further to the west. The section to the west will be most impacted but this is a more recent section of path. There will be some impact to the early path below the Sun Bear and former carnivore pits with new paving and possible change in levels or falls.

The following chart sets out the heritage impacts in detail.

4.7 Impact of Proposal on Potential Archaeological Features

Aboriginal

As the subject area contains an Aboriginal site there has been liaison during the project to minimise the impact on the site and any Aboriginal archaeological resource generally. The design has been revised to avoid and protect the site with the aim of there being no negative heritage impact. Structural elements have been located to be outside an exclusion area / set back. Mitigative measures are recommended to ensure protection during works.

The AMP recommends conserving the site and avoiding works above. However the rock face and concrete and brick structure above the site are now in poor condition and are a risk to the site. Works need to be undertaken to conserve the site. The AMP notes that if works above are required then the stability of rock shelf should be assessed, there should be no modification prior to consultation MLALC and that an AHIP Permit and consent is required. These steps are being undertaken separately prior to the SSD as the site is affected by the early works package.

Adjacent the site is a small area of sandstone ridges and ledges not modified by European development. The AMP lists these as having high archaeological sensitivity with potential for concealed intact sites. Subsurface disturbance is not proposed to these ridges and ledges.

Most of the site is Zone 4 or Zone 5 with respectively: low, or no, archaeological sensitivity / potential. These are areas heavily modified by European development but not excavated to bedrock (Zone 4) or previously excavated to bedrock (Zone 5). For these areas the AMP requires contractors involved in subsurface disturbance to be briefed about the possibility of remains and if relics are exposed to cease work and report to MLALC and NPWS and act as for Zone 3, i.e. archaeological investigation and AHIP permit.

Historical

With the exception of the historic path layout, the development area is an area zoned as having no potential for subsurface historical archaeological evidence, so the proposed works would have no impact on historical archaeological resources. Mitigative measures have been proposed in case of unexpected findings.

The AMP identifies the original path layout as having high archaeological sensitivity / potential but medium research potential. Policies recommend that if proposals destroy parts of the path that there should be an archaeological investigation, which may include monitoring, test or full excavation, prior to the commencement of work. Any excavation requires archaeological supervision in accordance with an excavation permit or exemption.

The surviving above ground features have however been identified in the Section 170 Register and the impact is assessed in the chart below.



Figure 4.2 Proposed Sumatran Tiger Exhibit – Schematic Design, Lahzimmu Architects, dated 1/05/2015. The area indicated by a red cloud (centre / bottom) is the Aboriginal site and there is a separate detail for this area with protection measures.

Table 4.1 Sumatran Tiger

Identification of Heritage Impacts on Significant Items within the Precinct

Abbreviations are: AMP = Archaeological Management Plan, CS= Conservation Strategy, LMP=Landscape Management Plan & s170=Section 170 Register

Heritage Items in the proposed exhibit			Names and numbers in bold refer to the LahzNimmo plan, figure 4.2		Heritage Impacts
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	
52B Upper Bear Pits	Local High	May be further adapted in accordance with heritage advice	The Sun Bear Exhibit (01) is to be retained including the original mock rock and the moat. The mock rock viewing cave built in 1999 is proposed to be demolished in part for the "airplane experience" structure.	The Sun Bear Exhibit (01) is to be retained including all remaining early fabric. There is to be some alteration to the existing 1999 cold room and store in the north western corner. Part of the 1999 mock rock cave will remain on the bear exhibit side of the new structure.	The cold room and store (28) is an existing facility with no heritage value. The mock proposed to be removed is modern. No mock rock from the original exhibit is being removed. There is no change to the original moat. Some mock rock is shown as being overlaid for a signage wall to the new Arrival Building. This is over the mock rock built in 1999 so there is no heritage impact .
62B Cats of Asia	Local High	May be further adapted in accordance with heritage advice	The two pits are to be retained in part as tiger off exhibit external areas. The existing building is to be demolished and a new single storey structure built.	The existing 1991 - 1993 two storey den and keeper building is to be demolished and a new single storey structure built. This encroaches into the former exhibits and reduces them in size by about one third. Excavation is required to build the new facility as is has a larger footprint than the existing building. To allow on grade access from the dens to the enclosure part of the former lion pit is to be excavated. The wall between the two exhibits is to be removed and a mesh keeper viewing area added. Mesh enclosure fixings are proposed to the top of the existing west wall of the tiger exhibit.	This will involve loss of the original form of the pits with the encroachment and removal of the dividing wall and reduction in size. The pits have been extensively altered in the past and the extent of survival of original fabric is unclear. Only the lower part of the north wall of the former Lion pit appears to be original mock rock with two caves. This will be retained but part will be behind the new structure. Other walls are in their original alignment but the former arcades were removed in the 1990s or before and the high relief mock rock. The line of the walls is however original and the core of the walls may be original. The pit to be excavated was filled in the past and former features may be buried such as the central rock, map of Australia and footings of the arcades. There is negative heritage impact on the former pits, which were previously altered extensively.

Heritage Items in the proposed exhibit				Names and numbers in bold refer to the LanzNimmo plan, figure 4.2	
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts
63L Sand-stone Retaining Wall	Local High	Maintain fabric	The retaining wall to Birdshow walk is to be retained.	No works are proposed to the wall. Drainage works are proposed above to better dispose of groundwater.	The works have positive heritage impact by improving drainage above the wall. The wall needs conservation work including the removal of damaging fig seedlings, repair and repointing. Conservation work should be undertaken as a mitigative measure.
66A Aboriginal Hand Stencil	NPWS Site #45-6-1959 Exceptional	Conserve in consultation with Aboriginal Community and NPWS	Construction of enclosure to Tiger Exhibit above site with one post to the east of the site.	Trees damaging the site are to be removed. Drains are to be adjusted to take water away from the site. The existing unstable masonry structure is to be removed by hand. A pylon that holds up the overall enclosure is to be located on the top of the existing rock ledge (07) east of the hand stencils. Two stays are to be in the garden bed below and to the east. A concrete L shaped wall pinned to the bedrock above is proposed to form the outer edge of tensile structure.	The proposal has been designed to not impact on the hand stencil site. Engineering advice has been sought on protecting the rock shelter. There have been extensive alterations to the design to move structures away from the site and construction methodology adopted to protect it. Measures include demolition by hand, no percussive tools, cutting rather than jack hammering. The site is to be protected during the works. An exclusion area has been established around the site. The amended proposal has no negative heritage impact. The removal of trees and drainage works have a positive heritage impact. Ensuring that the exclusion area for the overhang is retained throughout the design development and construction phase should be a condition of consent.
67L Stone Carvings	Local Some	No modification prior to consultation with Aboriginal community.	The carving into the live rock is to be retained.	No works are proposed to this feature. The rock face is outside the area of the proposed works.	This carving is a modern art work and interprets the Aboriginal site adjacent. It is understood to be one of several by this stonemason at the Zoo. Interviews with former staff may be able to determine the location of the other carvings. There is no heritage impact .
68L Rock Faces	Local Exceptional	Conserve in accordance with the Landscape Management Plan	The rock faces are to be retained.	No works are proposed to this feature. The rock face is outside the area of the proposed works.	This rock face is largely a cutting dating from when the adjacent roadway was constructed. It is above the roadway between the birdshow and Centenary picnic grounds. There is no heritage impact .

Heritage Items in the proposed exhibit				Names and numbers in bold refer to the LanzNimmo plan, figure 4.2	
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts
69L Natural Rock Benches	Local Exceptional	Conserve in accordance with the Landscape Management Plan	Existing sandstone ledges in the current snow leopard exhibit are to be retained (07).	No work proposed to rock faces however some trees are being removed above. A pylon for the tensile structure is also proposed above and an edge wall to fix the tensile structure.	No direct heritage impact. There are potential negative impacts from works in the vicinity during construction. As a mitigating measure drawings should clearly show this is S170 heritage item to be protected during construction. Detailed design of the pylon footings and tensile structure edge wall needs to have regard for the heritage items in the vicinity.
71L Broad-leaved paperbark	Local	Conserve in accordance with the Landscape Management Plan	Approval to remove 2 of these four trees from the s170 register has already been given.	Two trees that restrict the width of the roadway are proposed to be removed in the early works package to allow vehicle access. The adjacent aviary is proposed to be removed.	Heritage impacts have been addressed in the approved proposal to remove these from the s170 register. There is a small negative heritage impact to be mitigated by new plantings in the group.
85L Rendered Stone Wall	Local	Conserve in accordance with the Landscape Management Plan	Existing stone wall to be retained	No work proposed to wall. Works proposed to road above and the proposed supermarket structure is above part of the wall.	No direct heritage impact. There are potential negative impacts from works in the vicinity during construction. The wall has cracks and needs conservation work so construction work above may impact more than expected. As a mitigating measure drawings should clearly show this is S170 heritage item to be protected during construction.
88L Rockwork	Local	Conserve in accordance with the Landscape Management Plan	Within the Sun Bear Pit (01)	No work proposed.	No heritage impact.
98B Pygmy Hippo Enclosure	Local	Conserve in accordance with heritage advice.	The enclosure is to be retained. It has been integrated into the new Fennec fox exhibit.	No work proposed to item however some trees are being removed below it. A pylon for the tensile structure is also proposed below and to the west with stays higher up the slope. An edge wall is proposed to fix the tensile structure.	The building will continue in use as the Fennec fox exhibit. No heritage impact. There are potential negative impacts from works in the vicinity during construction. As a mitigating measure drawings should clearly show this is S170 heritage item to be protected during construction.

Heritage Items in the proposed exhibit				Names and numbers in bold refer to the LahzNimmo plan, figure 4.2	
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts
99L Original Early Paths	State Exceptional	Conserve in accordance with Conservation Management Plan and heritage advice.	Alteration to the path layout and levels is proposed.	The proposal drawings do not show detail of the path changes. Some sections appear to indicate the new path above current levels.	The existing path is not shown in relation to the new in the proposal drawings. Further details are needed to confirm the impact. The original path may be able to be retained below the new to mitigate the negative heritage impacts. Any excavation requires archaeological supervision in accordance with an excavation permit or exemption. If the path is to be removed an archaeological investigation, which may include monitoring, test or full excavation, is required prior to the commencement of work. Potential negative impact to be mitigated by archaeological excavation.
101B Snow Leopard, Stone Features	Local High	Conserve in accordance with heritage advice.	1990s snow leopard enclosure is to be replaced by a larger tiger exhibit but the stone features retained.	Existing fabric of modern enclosure to be removed. Rock shelves to be retained (see 69L, above)	The alteration of this area to create a large enclosure for tigers is not considered to have a heritage impact provided that the evidence of the natural sandstone rock outcrops and mock rock features is retained. Protection is needed during works in the vicinity, see 69L , above. No direct heritage impact.
175L Firewheel Tree	Local High	Retain and conserve. Ensure paving at base of trees is appropriate to allow expansion of trunks and adequate water penetration.	Two trees in this group of three are shown to be removed in the planting report but all are shown to be removed in the architectural drawings.	Removal of the trees. The planting report notes the removal but does not detail reasons. Construction of new tiger exhibit walls and vehicle entry. Construction of proposed "Ranger Station" building.	The trees to conflict with the enclosure walls and the exhibit vehicle entry and are within the construction footprint or too close to allow construction of the proposed "Ranger Station" building. The trees are too large and unsuitable for successful relocation. Negative heritage impact. Formal removal from the s170 register will be required. Replanting similar species elsewhere in the Zoo could be a mitigative measure. Detailed drawings need to clarify the extent of removal proposed.

Heritage Items in the proposed exhibit				Names and numbers in bold refer to the LanzNimmo plan, figure 4.2	
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts
178L Fig Tree	Local High	Retain and conserve. Continue to monitor health and safety regularly.	To be retained	This large fig tree is to form the centre of tiger exhibit 03 .	There is no heritage impact . The health and safety of the tree should continue to be monitored in the future.
179L Small Leaved Fig Tree	Local High	Retain and conserve. Continue to monitor health and safety regularly. Also continue to monitor the walling behind the exhibits to ensure structural integrity of walling is unaffected. Remove problematic seedlings and/or roots if necessary.	To be removed. Approval has been obtained to remove from s170 register	Tree removal and poisoning of roots in early works package. Trunk and roots are to remain so as not to damage the rockface.	Self seeded trees are damaging the sandstone rock shelves. The structural stability of the rock face and exhibit wall above has been damaged by the roots of the fig. Removal will protect Aboriginal site and overhang from further damage. The tree removal has a positive heritage impact.
242L Bhutan Cypress	Local High	Retain and conserve. The location of the present plantings should be checked to ensure that mature trees do not cause dense shading where this is not wanted.	Removal	Removal is proposed as the trees are unsuitable for the Sumatran planting theme.	The plantings are recent and associated with the Snow Leopard exhibit and have limited heritage value. The themed planting is no longer relevant. Small negative heritage impact. Formal removal from the s170 register will be required.
244L Maple	Local High	Conserve	Removal	Relocation is proposed elsewhere in the Zoo.	The plantings are recent and associated with the Snow Leopard exhibit and have limited heritage value. The themed planting is no longer relevant. Small negative heritage impact. Amend location in the s170 register.

Heritage Items in the proposed exhibit				Names and numbers in bold refer to the LahzNimmo plan, figure 4.2	
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts
251L African Tulip Tree	Local	Not in CMS or LMS	Retain.	No works proposed.	The tree is adjacent the former Pigmy Hippo exhibit now converted for the Fennec fox. It remains adjacent this enclosure. There is no heritage impact .
254L Bamboo	Local High	Conserve	Part retain and part remove and transplant.	Part of grove remains in off exhibit holding area. Relocation of part is proposed elsewhere in the Zoo.	This is shown as being retained on the architectural drawings but is shown as being partly removed on the Landscape drawings Some of the grove conflicts with the new den structures. Small negative heritage impact. Amend location in the s170 register.
267L Climber	Local High	Conserve	Remove.	Removal.	Appears to conflict with path and support structure over is being removed. Small negative heritage impact. Formal removal from the s170 register will be required.
268L Japanese Raisin Tree	Local High	Retain and Conserve	Retained.	Retained.	The tree is in the former Fennec fox enclosure which is being removed. It will be adjacent the new path. There is no heritage impact .
283L Hall's Crabapple	Local	Retain and Conserve	Remove.	Remove - unsuitable species.	Conflicts with new exhibit structures. Small negative heritage impact. Formal removal from the s170 register will be required.

END OF TABLE

Heritage Items within the vicinity of the proposed exhibit						
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts	
51L Sandstone Retaining Wall	State /Local High	Maintain fabric	No works proposed	Wall is either buried underground or previously removed	No impact	
61B Giraffe Houses	State Exceptional	Conserve in accordance with CMP	No works proposed	None	No impact	
70B Tahr Mountain	State Exceptional	Conserve in accordance with CMP	Minor alterations to exhibit fence.	Alter fence line to part of front (south) of exhibit. Relocation of animal shade structure. New path alignment in front of Tahr Mountain. Reconstruction of fence similar to existing.	The proposed new exhibit and path requires alteration of the lower part of the adjacent modern access ramp. To be clear of the new exhibit. This will encroach slightly on the space around Tahr Mountain. The shade enclosure to be moved is a modern simple shelter. The fence is low mock rock with modern chain wire and brush fencing above. The fence appears to have been altered previously but there is inadequate evidence about the date of the section of fence proposed to be altered. This can be checked during works. Minor negative heritage impact. Monitor and check existing fence construction during works for evidence of original construction. Record if found.	
73L Low Retaining Wall	Local Some	Maintain fabric	No works proposed	None	No impact	

Heritage Items within the vicinity of the proposed exhibit						
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts	
104L Bird Free Flight Amphitheatre	Local Some	Conserve in accordance with the Landscape Management Plan	No works proposed	None	No impact	
132L Rendered masonry wall	Local	Generally conserve walls	No works proposed	None	No impact	
180L Fig Tree	Local High	Retain and conserve	No works proposed, on other side of birdshow road	None	No impact	
236L Brush Box	Local High	Retain and conserve	No works proposed	None	No impact	
250L Christmas Bush	Local High	Retain and conserve	No works proposed	None	No impact	
255L Date Palm	Local High	Retain and conserve	No works proposed	None	No impact	
256L Date Palm	Local High	Retain and conserve	No works proposed	Previously removed	No impact Update s170 register to reflect previous removal.	
273L Sweet Acacia	Local High	Retain and conserve	No works proposed	None	No impact	

Heritage Items within the vicinity of the proposed exhibit					
s170 Item	Significance	Policies and Recommendations	Proposal	General Extent of Works	Heritage Impacts
277L Pygmy Date Palm	Local High	Retain and conserve	No works proposed	None	No impact
287L Aloes	Local	Not in LMP	No works proposed	None	No impact Previously relocated here from elsewhere in Zoo.
288L Kalanchoe	Local	Not in LMP	No works proposed	None	No impact Previously relocated here from elsewhere in Zoo.
289L Aloes	Local	Not in LMP	No works proposed	None	No impact Previously relocated here from elsewhere in Zoo.

5.0 Mitigative Measures

5.1 Preamble

As detailed in the Conservation Strategy, the zoo is a cultural landscape, the conservation of which should extend to the total resource, including the site's landscape, built elements, views and vistas, records, memories and associations, along with uses and activities.

Generally, in this proposal, the Zoo's site-wide values are retained, along with the individual heritage items within the proposed development site, ensuring the distinctive historic character of the place is retained. The proposal has been altered to minimise the impact on the Aboriginal site but there is some impact on individual heritage items, in particular 62B the two lion and tiger pits and on some plantings.

The following recommendations suggest mitigative measures. Some of the required actions with regard to the Aboriginal site have been carried out as they represent best practice in heritage conservation.

5.2 Adjustment of Design in Vicinity of Aboriginal Site

An AHIP permit has been sought but not yet determined for proposed tree removal in the vicinity of the Aboriginal site. This is proposed as an early works package to make Birdshow Road accessible to service vehicles and to protect the rock face and Aboriginal site which is being damaged by the tree roots. The trees will be lopped, poisoned and the lower part of the trunk and roots will be left to decay over time. Temporary support is proposed during works and longer term monitoring and repair, such as grouting cracks, if necessary. The AHIP application is appended including engineering reports and the required consultation.

Drawing A DA 020 shows the amended design of the proposed works in the vicinity of the Aboriginal site. The unstable structure over is proposed to be removed carefully by hand. The existing fence and path are to remain with minor repairs to the fence. A new spoon drain is proposed on the inside of the path discharging water past the Aboriginal site (it now flows on either side of the unstable structure and then over the Aboriginal site). All new structures are proposed to be setback from the Aboriginal site by a distance equal to or greater than the cliff height as recommended by the engineers Shreeji Consultant in their report about the Aboriginal site and sandstone cliff.

The concrete footing for the enclosure mesh is set back from the edge in the vicinity of the Aboriginal site to maintain the required clearance. It is designed to sit on top of the rockshelf fixed with a tension rod into the sandstone. This means no jack hammering is required to create a recess in the sandstone for the footing. Pneumatic equipment is noted as not to be used. The pockets in the stone are noted to be core drilled (i.e. cut) so there is no vibration created. It should be noted that the load on these rod is upwards rather than down into the bedrock so compressive loads will not be applied.

The proposed pylon originally near the Aboriginal site has been moved further east so it is setback from the Aboriginal site as noted above at 3.6m. The pylon has not been designed in detail but options are given with the note that excavation into sandstone is to be core drilled or cut avoiding vibration from construction. The pile is at an angle therefore loads will be directed into the bedrock away from the cliff edge. There are two stays in the garden bed below indicated as concrete pads and a core drilled piled footing to the sandstone. The closest stay is also about 3.6 m from the Aboriginal site and is in a garden bed built up above original ground level many years ago.

This excavation will need to be monitored, undertaken in conjunction with the Land Council to ensure works do not disturb potential archaeological deposits, such as art or middens sites, that may be buried beneath the current garden bed surface.

The site is to be protected during the works and this should be included in the specification and construction documents.

Recommended Conditions

Ensure that the above measures (including site protection, the exclusion area and construction methodology) are retained throughout the design development and construction phase.

Archaeologically monitor the excavation for the pylon stay, including Land Council consultation.

5.3 Recommended Mitigative Measures

5.3.1 Detailed Design

Detailed design is needed to resolve the interface between the proposal and heritage items within the site, including the Carnivora Pits, various walls and the natural rock outcrops. Detailed design of the pylon footings and tensile structure edge wall needs to have regard for the heritage items in the vicinity. No services drawing have yet been developed and these may also have heritage impacts.

In particular the design has not been developed to a degree that the impact on the 1930s pits, stone walls within the site and the rock shelves in the former Snow Leopard exhibit can be clearly assessed. The proposal covers one of the caves in the Lion enclosure believed to be original. This may be able to be retained and integrated into the den. The proposal now also removes the wall dividing the current Lion and Tiger enclosures and replaces it with a mesh enclosure. This wall or part of it may be able to be retained.

Develop the detailed design (including of services) to minimise impacts on heritage items within the site (particularly 62B the carnivore pits) and provide details for assessment.

When the carnivore pits are accessible allow access to establish whether parts of the structures are original or not.

5.3.2 Conservation Advice

Appropriate conservation advice should be available during the detailed design phase and throughout the works program. This should include availability for response to unforeseen circumstances that may arise during construction. Currently regular heritage advice is being provided to Taronga Zoo by staff specialist Jean Rice, Senior Project Manager, Heritage. For this project Dominic Steele Consulting Archaeologist has been engaged to provide advice about the Aboriginal site.

Retain appropriately skilled conservation advice throughout the design and construction.

5.3.3 Archival Recording

The history of the site is generally documented and additional research has been undertaken in respect to this project (see earlier in this report) including drawings of the original carnivore pits allowing prediction of where archaeological remains of the former structures may be found. A photographic archival record has been made of the proposed site and items in the vicinity including individual heritage items, their respective settings and views to and from the subject development area. Additional recording should be made during the works, paying attention to any items revealed during excavation and tree removal.

Undertake additional archival recording during construction of items unexpectedly revealed during works or made accessible during the works.

5.3.4 Archaeology

Approval from the Heritage Council of NSW under Section 140 of the *Heritage Act 1977* (NSW) is required if the original path network is to be impacted upon, in accordance with the policies and recommendations outlined in the Taronga Zoo AMP. Excavation in the former Carnivora pits may also require such approval however this area has been previously filled and the work may require removal of fill only. Test pits cannot be dug until the exhibit is no longer in use. At present the design has not been developed to a degree that the impact on the original path layout can be determined.

In the event that unexpected historical archaeological relics are encountered during construction, works are required to cease and the NSW Heritage Office notified, pursuant to Section 146 of the *Heritage Act 1977* (NSW). For Aboriginal finds, the Office of Environment is to be notified as detailed earlier in this report.

Seek approvals and undertake archaeological excavations as required if excavation requires disturbance of the original paths or of the original fabric of the Carnivora pits.

If unexpected historical archaeological relics are found cease work and notify the NSW Heritage Office as required under Section 146 of the Heritage Act 1977 (NSW).

5.3.5 Contractor Induction

Suitable clauses should be included in all site contractor and subcontractor contracts to ensure that on-site personnel are aware of their obligations and requirements in relation to the *Heritage Act 1977* (NSW) and the NPWS Act, both of which are managed by the Office of Environment and Heritage (OEH).

Specifically, relevant on-site personnel should be made aware of the procedure to be followed for notification and stopping works should items of heritage significance, including evidence of aboriginal occupation, be found during site works.

Include conditions in specification about contractor responsibilities for heritage and conduct contractor inductions for heritage issues along with WHS inductions.

5.3.6 Protection of Heritage Items during Works

Adequate signage should be erected in the vicinity of the heritage items within the development site that are to be retained alerting contractors and subcontractors to their existence and the need to protect them from damage. Some items such as the Aboriginal site will require specific protection (such as fencing or falling rock barriers) to be constructed during the works. These items (as identified on the Section 170 Register) are currently not all shown on the architectural and landscape drawings. This includes mock and natural rock throughout the site. Temporary access to the site should be determined in such a manner so that there is no impact of the surrounding heritage items, vegetation or landforms.

Part of the fence of Tahr Mountain (70B) is proposed to be demolished and rebuilt in an altered line. It is not known if the base is original construction. The fence should be monitored and assessed during works for evidence of original construction and recorded if found.

Include conditions in specification about protection of heritage items and identify heritage items to be protected on drawings.

During works monitor the section of fence of 70B to be altered and record if it is original fabric.

5.3.7 Landscape Heritage Items

The existing landscape heritage items in the precinct and within its vicinity should be clearly marked during construction and all workers inducted as to their significance prior to starting works on the site. These items (as identified on the Section 170 Register) are currently not all shown on the architectural and landscape drawings. The negative heritage impact of removal of some trees listed as heritage items can be mitigated by new plantings or relocation of some plants. All works to significant trees should be undertaken in accordance with the Taronga Zoo Tree Protection Guidelines.

Identify and protect landscape heritage items during construction and in documentation.

Mitigate removal of plants by relocations and new plantings of similar species elsewhere in the Zoo.

Where trees are to be removed notify the Heritage Division of their removal from the s170 register.

5.3.8 Interpretation

An important obligation arising from the historic significance of Taronga Zoo is that its cultural heritage values should be interpreted to the public. Previous studies have recommended that a strategy for interpreting the site as a whole should be developed to effectively and creatively incorporate an integrated approach to interpreting the site's significant heritage aspects. This is beyond the scope of this proposal.

The site contains the Sun Bear exhibit, originally Lions and Tigers dating from the original 1916 phase of construction. As it is their centenary in 2016 they could be identified and interpreted as part of an overall site interpretation or interpreted at the site by a display some of the original photos of the exhibits.

As the proposal extensively alters the Carnivora pits, 62B, interpretation of the original configuration of these pits should be included, eg. by display of original photos.

Interpret the 1916 pits (52B) and the Carnivora pits (62B).

5.3.9 Conservation Work

63L The works have **positive heritage impact** by improving drainage above the retaining wall 63L however the wall needs conservation work including the removal of damaging fig seedlings, repair and repointing.

Conservation work to wall 63L is recommended as a mitigative measure.

6.0 Conclusion

As documented, the primary significance of Taronga Zoo lies in its unique and evocative cultural landscape; the place's ability to show the evolution of zoological approaches over the last century; its continuity of use and its recognition as a zoo of world-standing; and for the iconic sense of place and esteem in which it is held by visitors and Sydney residents.

This proposal is one of a number of recent changes to the zoo that have resulted to the change in focus towards promoting the conservation of species in their original habitat.

Overall there is little negative heritage impact. There is positive heritage impact in the protection of the Aboriginal site. There is some negative impact on the former Carnivora pits 62B and the possible greater retention should be considered during the design development phase to ensure that as much as possible of these pre World War II animal enclosures is retained.

Steps also need to be taken in the construction phase to ensure that the items to be retained are adequately protected, including the Aboriginal hand stencil site and landscape items.

Jean Rice Architect
May 2015