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URBIS

HISTORICAL ARCHAEOLOGICAL ASSESSMENT

**Taronga Wildlife Hospital - The
Nutrition Centre, Taronga Zoo**
Bradleys Head Road
Mosman, NSW

Prepared for
TARONGA CONSERVATION SOCIETY AUSTRALIA
22 December 2021

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EXECUTIVE SUMMARY

This report presents the findings of a Historical Archaeological Impact Assessment (HAIA) for the proposed development of a Wildlife Hospital Nutrition Centre (Nutrition Centre) at Taronga Zoo, 2A Bradleys Head Road, NSW (hereafter referred to as the 'subject area') (see Figure 1 and Figure 2).

Urbis has been commissioned by Taronga Conservation Society Australia (the Proponent) to produce an HAIA in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD-17483577). This HAIA will accompany an Environmental Impact Statement (EIS) for the proposed works.

This assessment has been prepared for the proposed development of Lot 22 DP 8432904 (partial), which is Crown Land managed by the TCSA (the Zoological Park Board). The proposed works will involve the demolition of existing structures and landscape within the subject area and the construction of a new Wildlife Hospital.

This assessment addresses the relevant requirements of the Department of Planning's Secretary's Environmental Assessment Requirements (SEARs) and has been carried out in accordance with the following guidelines:

Assessing Significance for Historical Archaeological Sites and 'Relics' (NSW Office of Environment and Heritage (OEH) (2009).

- *Assessing Heritage Significance* (NSW Heritage Manual 2) (NSW Heritage Office 2001).
- *Historical Archaeology Code of Practice* (Heritage Council of NSW 2006).
- *Taronga Zoo Archaeological Management Plan, 2004*, GML
- *Taronga Zoo Conservation Strategy, 2002*, GML
- *Taronga Zoo Australian Section (Upper) Heritage Items at Site, 2018*, Taronga Conservation Society
- The philosophy and process adopted is that guided by the Australia ICOMOS *Burra Charter* 2013.

Archaeological Potential

This HAIA has determined that the subject area has:

- low potential to contain archaeological resources associated with the early European development of the subject area and Mosman more generally (1788-1911);
- low potential to contain archaeological resources associated with the establishment of Taronga Zoo under the Directorship of La Souef (1912-1940);
- moderate potential for archaeological resources which evidence adaptations to the Zoo under Hallstrom's Directorship (1941-1966); and
- high potential to contain archaeological resources which evidence adaptations to the Zoo under Strahan's Directorship (1967-1986).

Archaeological Significance

Although it is considered unlikely that historical archaeological features associated with early land grants would survive within the subject area, these would have significance at a State level for their ability to reflect and provide information about the earliest European settlement of the Mosman area which cannot be garnered from available historical sources.

Historical archaeological resources associated with the former Camel and bird enclosures, Hospital and Incinerator would have local significance for their association with adaptations to the Zoo under Hallstrom's Directorship (1941-1966). Evidence of the Camel and bird enclosures may have local significance for their ability to demonstrate the historical development of Taronga Zoo and evolving attitudes toward zoological practices. Evidence of the former Hospital and Incinerator may likewise have local significance for their ability to reflect the earliest phase of zoological veterinary activities within the Zoo site.

Impact Assessment

This HAA has established that there is nil potential for these potential archaeological features associated with the mid-20th century incinerator to be impacted by the proposed development.

There is low-moderate potential for the proposal to impact evidence of the former bird enclosure within the south-eastern portion of the site. In the unlikely event that high integrity, legible remains of this feature are exposed, these may meet the threshold for local significance.

Recommendations

Based on the above conclusions, Urbis provides the following recommendations:

Recommendation 1 - Monitoring

For proposed surface disturbance within the south-eastern portion of the subject area and within the vicinity of the former bird enclosure (see Figure 34 & Figure 35), close monitoring should be undertaken by a suitably qualified archaeologist. In general, archaeological monitoring should adhere to the following:

- Demolition should be undertaken in such a way as to minimise impacts to foundations and subsurface structures. The archaeologist should initially be consulted about the proposed demolition methodology.
- An archaeologist should be present at all times during the lifting of current hard surfaces, excavation and/or other activities that result in ground disturbance.
- Where a mechanical excavator is used, it must have a flat or mud bucket, rather than a toothed bucket, to ensure a level ground surface.
- All machinery should work backwards from a slab surface in order to avoid damage to any exposed archaeological relics.
- Fills should be removed sequentially in reverse order of deposition, starting with any imported fill and overburden, which reflect the archaeological stratigraphy and as instructed by the archaeologist.
- If archaeological relics are identified by the monitoring archaeologist, work must stop immediately. Further assessment and recording of the find will be required.

Recommendation 2 – Chance Finds Procedure

For proposed surface disturbance, including excavation for the TWH Nutrition Centre first-floor and second-floor and landscaping works throughout the remainder of the subject area, the following Chance Finds Procedure should be implemented:

1. All works must stop in the immediate vicinity of the find. The find must remain undisturbed and temporary fencing established around the find.
2. The Site Supervisor, or another nominated site representative must contact an appropriately qualified archaeologist.
3. The archaeologist should examine the find, provide a preliminary assessment of significance based on the findings of this HAA, record the item and decide on an appropriate management strategy.
4. Depending on the significance of the find, re-assessment of the archaeological potential of the area may be required, and further archaeological investigation required.
5. Works in the vicinity of the find can only recommence upon on the written advice of the nominated Excavation Director.

Recommendation 3 – Archaeological Induction

Prior to the commencement of works, an archaeological induction should be delivered by Urbis to all relevant construction personnel for the purpose of establishing:

- heritage obligations of all project personnel;
- how to identify archaeological relics of State or local significance;
- what to do in the event that potential relics are uncovered; and
- how the Unexpected Finds Procedure works in practice.

1. INTRODUCTION

This report presents the findings of a Historical Archaeological Impact Assessment (HAIA) for the proposed development of a Wildlife Hospital Nutrition Centre (Nutrition Centre) at Taronga Zoo, 2A Bradleys Head Road, NSW (hereafter referred to as the 'subject area') (see Figure 1 and Figure 2).

1.1. PROJECT BACKGROUND

Urbis was commissioned by Taronga Conservation Society Australia (the Proponent) to produce an HAIA in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the State Significant Development Application (SSD-17483577). This HAIA will accompany an Environmental Impact Statement (EIS) for the proposed works.

The HAIA was initially to address the works for the whole Wildlife Hospital site. In October 2021 the project was divided from one site comprising the Taronga Wildlife Hospital Nutrition Centre and Wildlife Hospital, to two separate sites. This HAIA is concerned only with the portion of the site which will contain the proposed Wildlife Hospital.

The report was prepared having regard to the Secretary's Environmental Assessment Requirements (SEARs) for the project by DPIE (ref no. SSD-17483577) issued on 30 April 2021. This HAIA responds to requirement 4 of the SEARs as outlined in the below table:

Table 1 – SEARs and relevant report sections

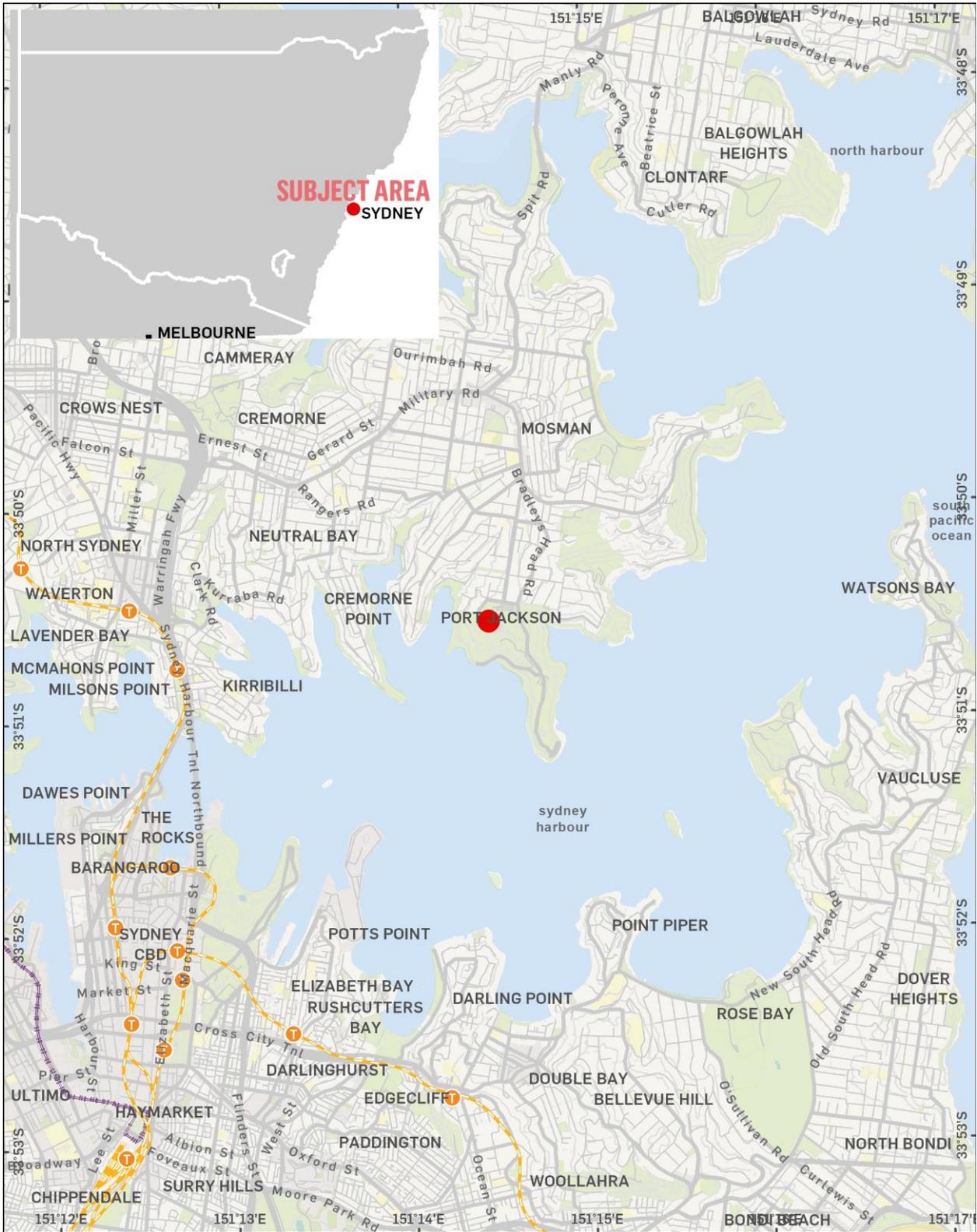
SEARs Item	Report Section
<p>4. Heritage</p> <p><i>The EIS must include:</i></p> <ul style="list-style-type: none"><i>a Heritage Impact Statement, prepared in accordance with relevant guidelines, assessing the impact of the proposal on the heritage significance of the site and surrounding area, including heritage items, conservation areas and archaeology, and includes measures to reduce or mitigate any unavoidable impacts. This must identify compliance with the relevant Conservation Management Plan and Taronga Zoo Conservation Strategy, prepared by GML, dated 2002.</i>	<p>This HAIA has been prepared in accordance with the guidelines as set out in the following publications:</p> <ul style="list-style-type: none"><i>Assessing Significance for Historical Archaeological Sites and 'Relics' (2009)</i><i>Historical Archaeological Code of Practice (2006)</i> <p>This HAIA has identified both the archaeological potential (Section 5) and archaeological significance (Section 6) as a means of assessing the potential impacts of the proposal on the non-Indigenous archaeological values of the subject area (Section 0).</p>

1.2. LOCATION AND DESCRIPTION OF THE SUBJECT AREA

Taronga Zoo is located at Bradleys Head Road, Mosman and is situated in the Mosman Local Government area (LGA). The site is bounded by Bradleys Head Road to the east, Athol Wharf Road and Sydney Harbour to the south, Little Sirius Cove to the west and Whiting Beach Road to the north.

Taronga Zoo is legally described as Lot 22 on DP843294 and is Crown Land managed by the TCSA (the Zoological Park Board).

The proposed Nutrition Centre Hospital is located within the north western portion of the zoo, within the existing back-of-house area to the north-west of the zoo boundary. This area currently contains an open-air carpark and various ancillary structures which are in use for storage purposes.



GDA 1994 MGA Zone 56

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Project No: P0031212
 Project Manager: Balazs Hansel

● Subject Area

REGIONAL LOCATION
 Taronga Wildlife Hospital
 Taronga Conservation Society

Figure 1 - Regional Location



GDA 1994 MGA Zone 56

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Project No: P00xxxxx
 Project Manager: Balazs hansel

■ Subject Area — Contours

Location of the Subject Ar
 Taronga Wildlife Hospital – The Nutrition Cen
 Taronga Conservation Soci

Figure 2 –Location of the subject area.

1.3. THE PROPOSAL

Current nutrition centre facilities at Taronga Zoo, Sydney have reached the end of their useful life. New facilities are therefore required to meet best practice standards in animal welfare and work health safety.

The TWH Nutrition Centre, together with the future Wildlife Hospital project will be a world-class nutrition; veterinary and education facility, which will showcase Taronga's significant role in general conservation and animal care. The proposed Taronga WLH Nutrition Centre will support the Zoo's logistical requirements for the provision of animal foods and the veterinary care of injured animals and wildlife. A key focus of the design of this facility is the health and wellbeing of animals that the Zoo cares for, but also for the humans who care for them.

The proposed works associated with the new TWH Nutrition Centre will include the following:

- Demolition of existing structures.
- Service upgrades and rearticulation.
- Clearance of vegetation.
- Construction of new, multi-storey Nutrition Centre building.
- Hard and soft landscaping.
- Provisions for future connections to and from the proposed future Wildlife Hospital.

The subject area has also included the area for proposed future works to be undertaken under a Review of Environmental Factors. While no works specifically associated with the REF have been identified, the area assessed in this ACHA includes the REF area.

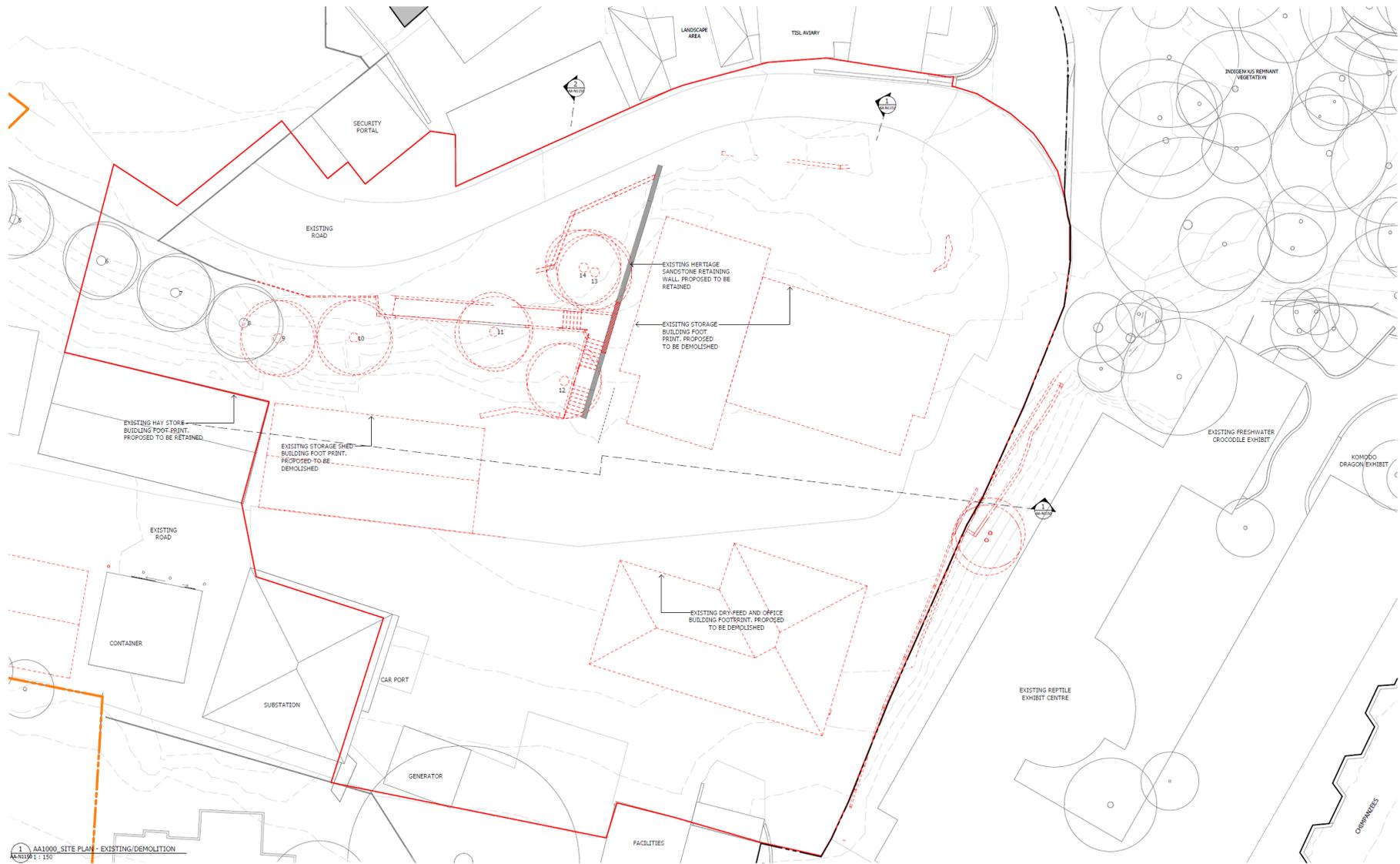


Figure 3 – Site Plan – Existing and Demolition

Source: DWP, 14/12/2021, Issue Q, Drawing no. AA-N1000



Figure 4 – General Arrangement Plan – Level 01

Source: DWP, 14/12/2021, Issue P, Drawing no. AA-N1200

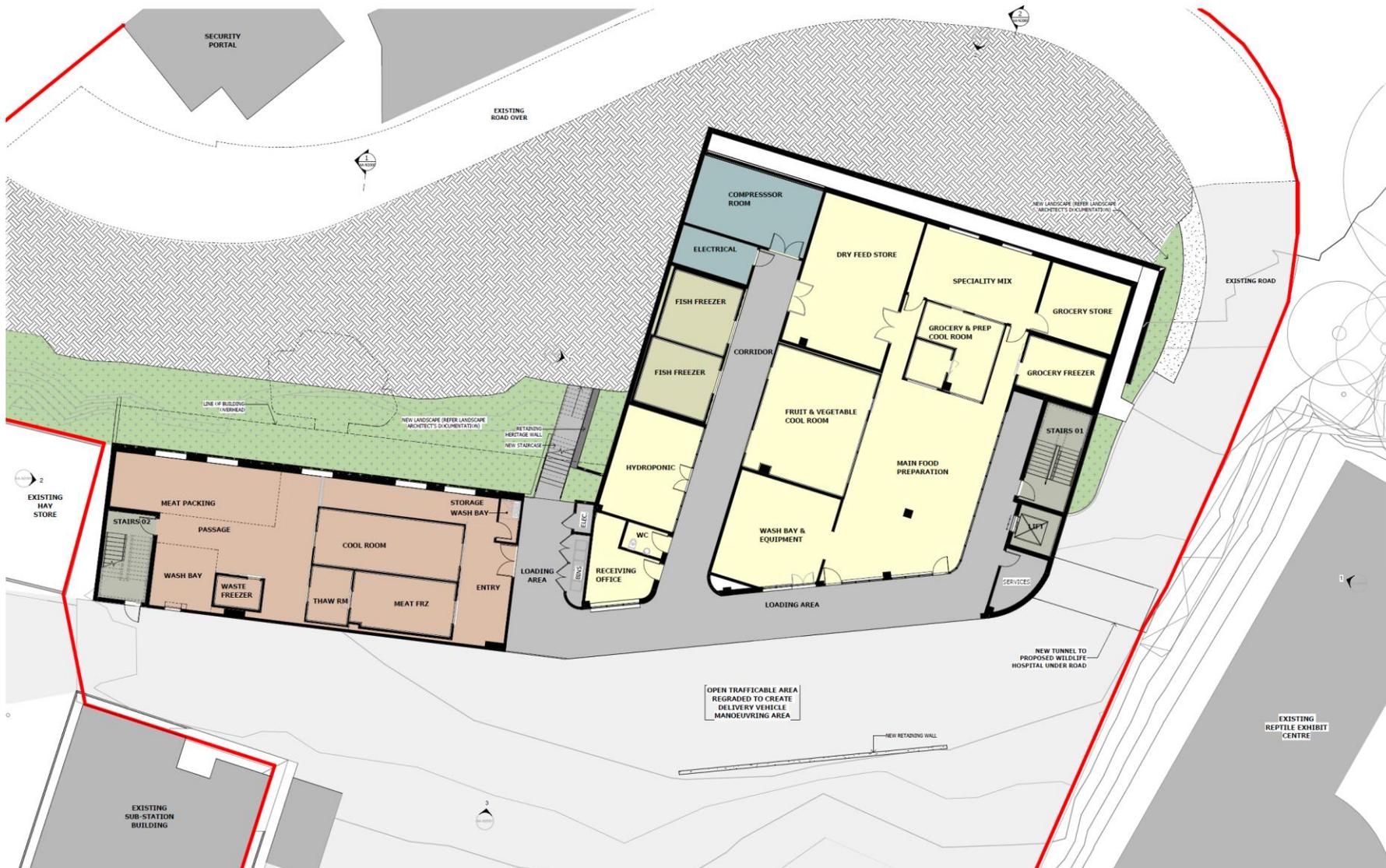
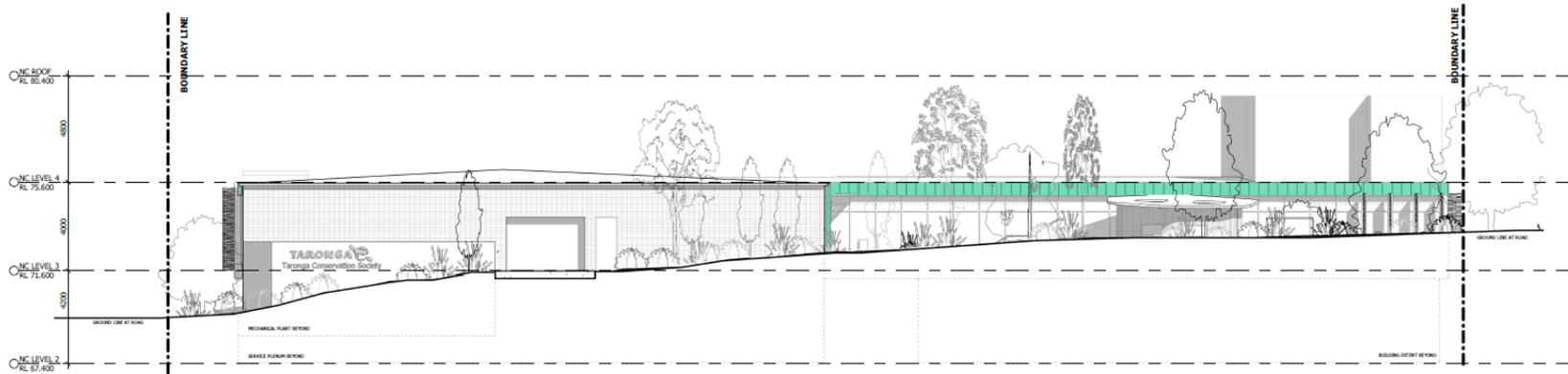


Figure 5 – General Arrangement Plan – Level 02

Source: DWP, 14/12/2021, Issue S, Drawing no. AA-N1201



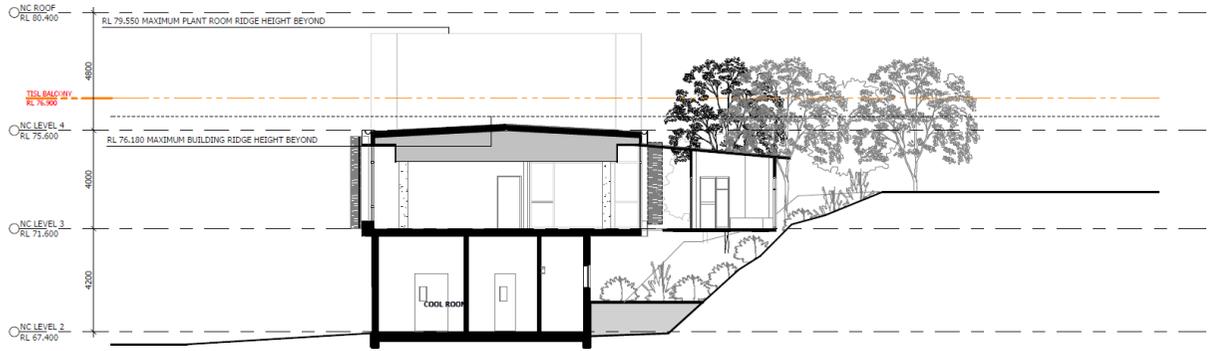
1 NUTRITION BUILDING - SOUTH ELEVATION
 A4:RDA 1:100



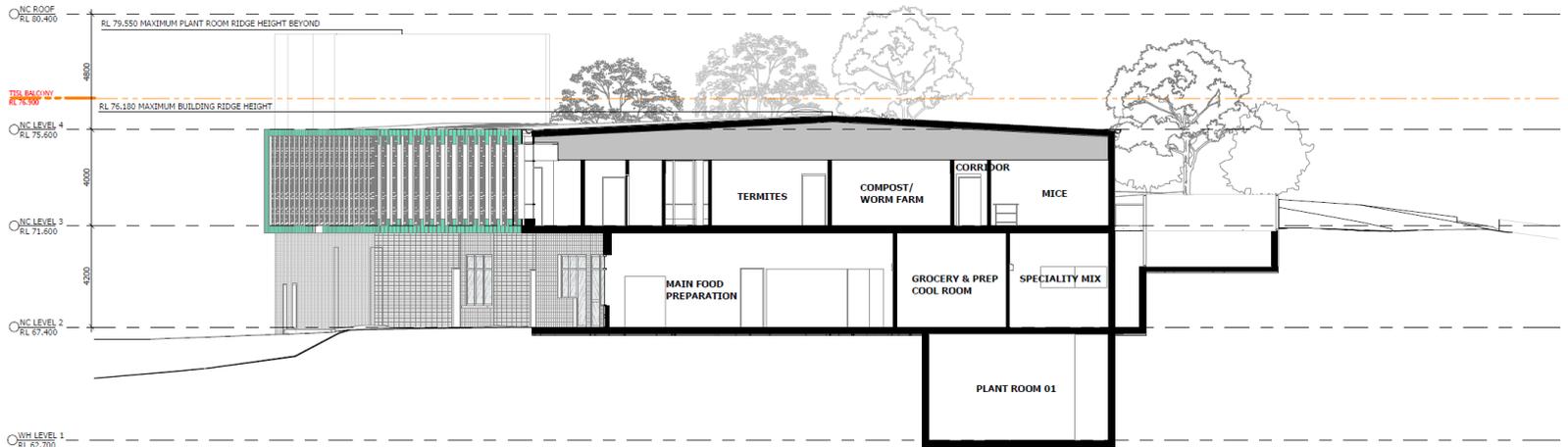
2 NUTRITION BUILDING - EAST ELEVATION
 A4:RDA 1:100

Figure 6 – Elevations

Source: DWP, 24/11/2021, Issue K, Drawing no. AA-N2000



1 NUTRITION BUILDING SECTION A
 1:100



2 NUTRITION BUILDING SECTION B
 1:100

Figure 7 – Sections

Source: DWP, 01/12/2021, Issue L, Drawing no. AA-N3000

1.4. METHODOLOGY

This HAIA has been prepared with reference to the following guidelines and documents:

- *Assessing Significance for Historical Archaeological Sites and 'Relics'* (NSW Office of Environment and Heritage (OEH) (2009).
- *Assessing Heritage Significance* (NSW Heritage Manual 2) (NSW Heritage Office 2001).
- *Historical Archaeology Code of Practice* (Heritage Office of the Department of Planning NSW 2006).
- *Taronga Zoo Archaeological Management Plan, 2004*, GML
- *Taronga Zoo Conservation Strategy, 2002*, GML
- *Taronga Zoo Australian Section (Upper) Heritage Items at Site, 2018*, Taronga Conservation Society
- The philosophy and process adopted is that guided by the Australia ICOMOS *Burra Charter* 2013.

1.5. AUTHOR IDENTIFICATION

This HAIA has been prepared by Alexandra Ribeny (Urbis, Consultant/ Archaeologist). Balazs Hansel (Associate Director) has reviewed its content.

Unless otherwise stated, all drawings, illustrations and photographs are the work of Urbis.

1.6. LIMITATIONS

This report is limited to a presentation and analysis of potential impacts on the historical archaeological (non-Aboriginal) potential only. The assessment of archaeological potential is limited specifically to the subject area as identified by the red polygon in Figure 2.

No intrusive archaeological methods including archaeological test excavation have been applied for the purposes of this report.

1.7. RELEVANT DEFINITIONS

Relevant terms and definitions used throughout this HAIA are defined in Table 1.

Table 2 – Terms & Definitions

Term	Definition
Archaeological assessment	A study undertaken to establish the nature, extent, and significance (research potential) of archaeological resources that may exist within a particular site and to identify appropriate measures to manage those resources.
Archaeological potential	The degree of physical evidence present at an archaeological site, usually assessed on the basis of physical evaluation and historical research.
Archaeology	The study of past human culture, behaviour and society through the study and analysis of physical remains, including buildings, graves, tools and other objects.
Australia ICOMOS	The national committee of the international Council on Monuments and Sites.
Burra Charter	Charter adopted by Australia ICOMOS, which establishes the nationally accepted principles for the conservation of places of cultural significance. Although the Burra Charter is not cited formally in statutory legislation, it is nationally recognised as a document that shapes the policies of Heritage NSW, Department of Premier and Cabinet.

Conservation	All the processes of looking after an item so as to retain its cultural significance. This includes maintenance and may, according to circumstances, include preservation, restoration, reconstruction, and adaptation, and will commonly be a combination of more than one of these processes.
Conservation Management Plan	A document explaining the significance of a heritage item, including a heritage conservation area, and proposing policies to retain that significance. It can include guidelines for additional development of maintenance of the place.
Conservation policy	A proposal to conserve a heritage item arising out of the opportunities and constraints presented by the statement of heritage significance and other considerations.
Context	The specific character, quality, physical, historical and social characteristics of a building's setting.
Curtilage	The geographic area that provides the physical context for an item which contributes to its heritage significance. Land titles boundaries do not necessarily coincide with the curtilage.
Heritage and Conservation Registers	A register of heritage assets owned, occupied or controlled by a State agency, prepared in accordance with Section 170 of the <i>Heritage Act 1977</i> .
Heritage item	A landscape, place, building, structure, relic or other work of heritage significance.
Heritage significance	Of aesthetic, historic, scientific, cultural, social, archaeological, natural or aesthetic value for past, present or future generations.
Heritage value	Often used interchangeably with the term 'heritage significance'. There are four nature of significance values used in heritage assessments (historical, aesthetic, social and technical/research) and two comparative significance values (representative and rarity).
Relics	A relic is defined under the NSW <i>Heritage Act 1977</i> as any deposit, object or material evidence which relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and is of state or local heritage significance.
Use	Means the functions of a place and the activities and practices that occur at the place. A compatible use respects the cultural significance of the place.

2. STATUTORY CONTEXT

2.1. NATIONAL LEGISLATION

Environment Protection and Biodiversity Conservation Act 1999

2.1.1. Environment Protection and Biodiversity Conservation Act 1999

In 2004, a new Commonwealth heritage management system was introduced under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The National Heritage List (NHL) was established to protect places that have outstanding value to the nation. The Commonwealth Heritage List (CHL) was established to protect items and places owned or managed by Commonwealth agencies. The Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) is responsible for the implementation of national policy, programs and legislation to protect and conserve Australia's environment and heritage and to promote Australian arts and culture. Approval from the Minister is required for controlled actions which will have a significant impact on items and places included on the NHL or CHL.

Commonwealth Heritage List

The (CHL) was established by the EPBC Act to protect Indigenous, historic, and natural heritage places owned or controlled by the Australian Government. The CHL and EPBC Act contain provisions for the management and protection of listed places under Commonwealth ownership or control. There are no items on the Commonwealth Heritage List within the study area. As such, the heritage provisions of this act do not apply, and project works for the Proposal would not require referral to the Minister.

The subject area is not included on the CHL, and no historic heritage items in or within the vicinity of the subject area are listed on the CHL.

National Heritage List

The National Heritage List (NHL) was established by the EPBC Act to protect places of significant natural or cultural heritage value at a National level. The EPBC Act requires NHL places to be managed in accordance with the National Heritage Management Principles. Under sections 15B and 15C of the EPBC Act, a referral must be made to the Department of the Environment and Energy for actions that are likely to have a significant impact on National Heritage listed properties. There are no items listed on the National Heritage List within the study area. As such, the heritage provisions of this act do not apply, and project works for the Proposal would not require referral to the Minister.

The subject area is not included on the NHL and no historic heritage items in or within the vicinity of the subject area are listed on the NHL.

2.2. STATE LEGISLATION

2.2.1. NSW Heritage Act 1977

The NSW Heritage Act 1977 (the Heritage Act) provides protection to items of environmental heritage in NSW. This includes places, buildings, works, relics, moveable objects and precincts identified as significant based on historical, social, aesthetic, scientific, archaeological, architectural, cultural or natural values. State significant items are listed on the NSW State Heritage Register (SHR) and are given automatic protection under the Heritage Act against any activities that may damage an item or affect its heritage significance.

Under Section 57(1) of the Heritage Act Heritage Council approval is required to move, damage, or destroy a relic listed in the State Heritage Register, or to excavate or disturb land which is listed on the SHR and there is reasonable knowledge or likelihood of relics being disturbed.

The Act defines a 'relic' as:

Any deposit, object or material evidence

- (a) *which relates to the settlement of the area that comprises New South Wales, not being an Aboriginal settlement, and;*

(b) which is 50 or more years old. A Section 60 application is required to disturb relics on an SHR listed site.

Under section 139 of the *Heritage Act*, an excavation permit is required to disturb or excavate land “knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed”. This section of the *Heritage Act* identifies provisions for items /relics outside of those on the State Heritage Register or subject to an Interim Heritage Order (IHO).

State Significant Development Applications (SSDAs)

The subject proposal is a State Significant Development (SSD), meaning that the provisions of the *Heritage Act 1977*, as outlined above, do not apply. The development application will instead be assessed under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Projects approved under Division 5.2 do not require approval under Part 4 of the *Heritage Act 1977*, but the Historical Archaeological Impact Assessment (HAIA) must outline proposed mitigations measures for any potential harm to relics. The Standard Secretary’s Environmental Assessment Requirements (SEARs) must also be strictly adhered to.

State Heritage Register

The *Heritage Act* is administered by the Office of Environment and Heritage. The purpose of the *Heritage Act 1977* is to ensure cultural heritage in NSW is adequately identified and conserved. Items of significance to the State of NSW are listed on the NSW State Heritage Register (SHR) under Section 60 of the Act.

The subject area does not contain, nor is it located within proximity of, any sites which are listed on the State Heritage Register.

Section 170 Heritage and Conservation Register

The *Heritage Act* also requires government agencies to identify and manage heritage assets in their ownership and control. Under Section 170 of the *Heritage Act*, Government agencies must keep a register which includes all local and State listed items or items which may be subject to an interim heritage order that are owned, occupied or managed by that Government body. Under Section 170A of the *Heritage Act* all government agencies must also ensure that items entered on its register are maintained with due diligence in accordance with State Owned Heritage Management Principles.

Taronga Zoo contains over 200 heritage items which are listed on the Heritage and Conservation Register for Taronga Zoo, prepared in accordance with Section 170 of the *Heritage Act 1977*. Those which are located within the subject area are listed in Table 3.

Table 3 - S.170 heritage items located within the subject area

Item Name	Listing	Significance
Sandstone Perimeter Wall	07L	State
Moonstone Relic	108L	Local



Figure 8 – Section 170 heritage items located within the subject area.

Source: DWP, 18/10/2021, Issue D, Drawing no. AA-N0504

2.2.2. Environmental Planning and Assessment Act 1979

Local Environmental Plans (LEPs) are made under the Environmental Planning and Assessment Act 1979 (EP&A Act). The Mosman LEP 2012 is applicable to the subject area.

Mosman Local Environmental Plan (LEP) 2012

Under Section 5.10, Clause 2 of the Mosman LEP 2012, development consent is required when:

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed.

Under Section 5.10, Clause 7 it is specified that:

(the) consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the Heritage Act 1977 applies):

(a) notify the Heritage Council of its intention to grant consent, and

(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

Historical archaeological sites are listed under Part 3 of Schedule 5 of the Mosman LEP 2012.

The subject area is located within the curtilage of a local heritage item which is listed under Part 1 of Schedule 5 of the Mosman LEP 2012 as “Rainforest Aviary”, “Elephant House”, bus shelter and office, floral clock and upper and lower entrance gates’ (item no. I34). The subject area is also located within proximity of local heritage item ‘Ashton Park’ (item no. I458).

2.3. NON-STATUTORY INSTRUMENTS

2.3.1. Taronga Zoo Archaeological Management Plan, 2004, GML

The Taronga Zoo AMP identifies the subject area within the following historical archaeological management zone (Figure 10):

Zone D

This Historical Archaeological Management Zone encompasses the rest of the site, where excavations for the foundations of previous Zoo structures have reached down to bedrock or culturally sterile soil profiles, or where there has been little or insignificant historical development. Zone D is not expected to contain any historical material culture and is therefore assessed as having no archaeological sensitivity.

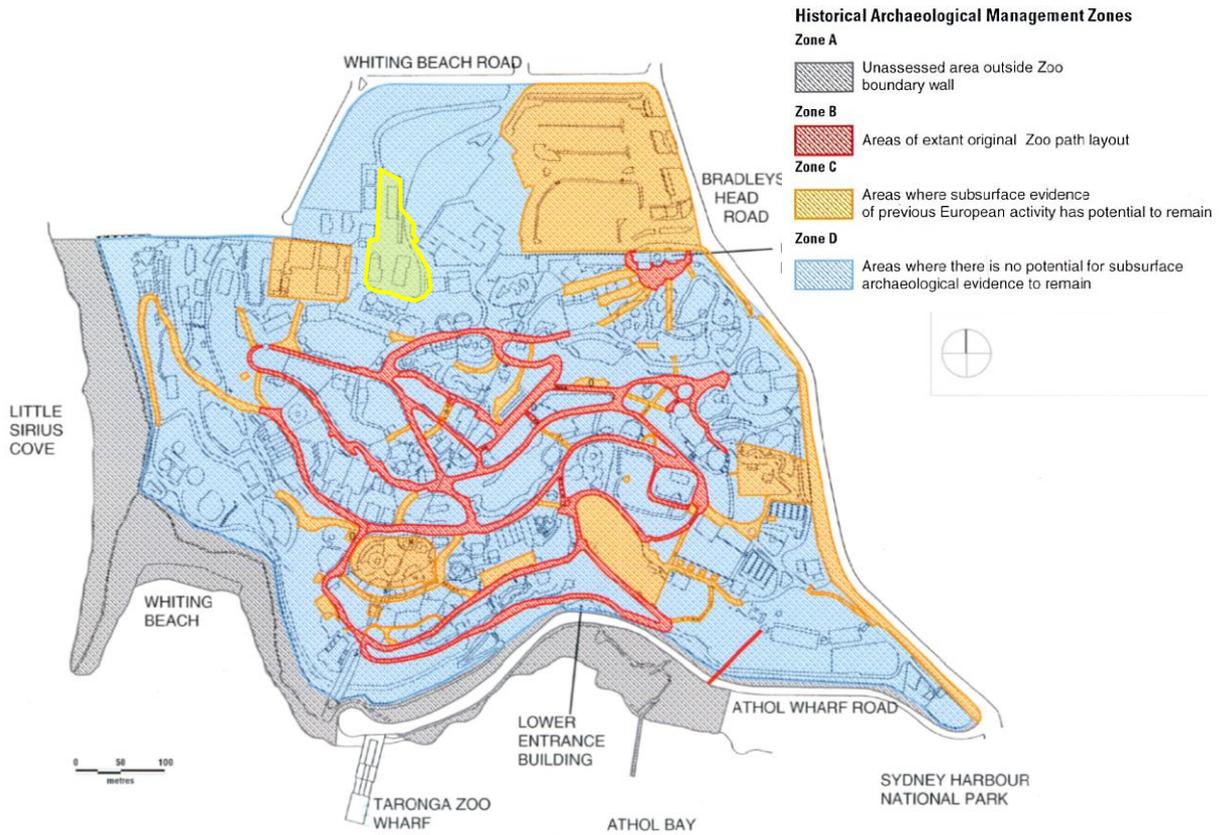


Figure 10 – Historical archaeological management zones. Approximate location of the subject area indicated in yellow outline.

Source: Taronga Zoo AMP 2004

The Taronga Zoo AMP does not identify the potential for historical archaeological remains within the subject area (Figure 11):

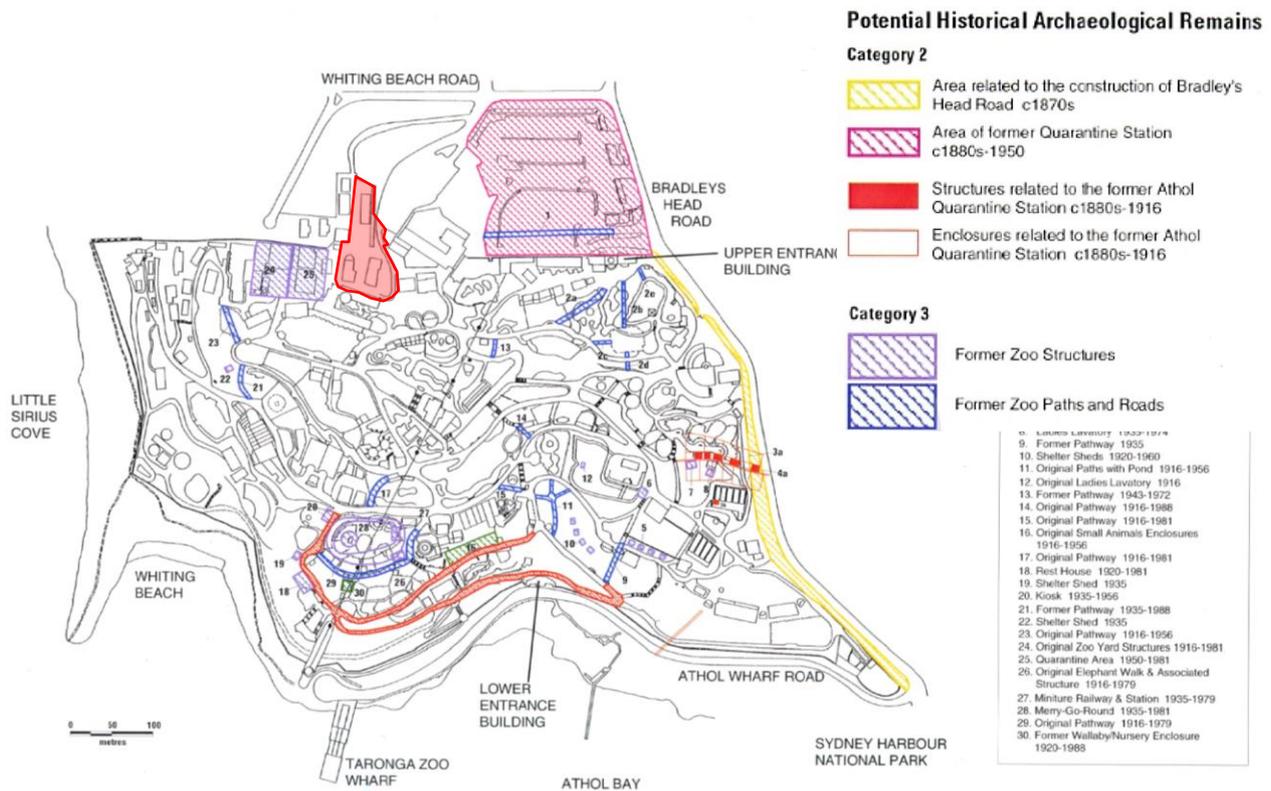


Figure 4.7 Taronga Zoo Potential Historical Archaeological Remains

Figure 11 - Potential historical archaeological remains. Approximate location of the subject area indicated in red outline.

Source: Taronga Zoo AMP 2004

Note: It is understood that the above maps (Figure 10 & Figure 11), which have been extracted from the 2004 CMP, incorrectly locate the former quarantine structure within the footprint of the subject area on the grounds that the historical overlay was incorrectly fitted to the map of the existing site.¹

2.4. HERITAGE CONTEXT

The heritage context of the subject area is summarised as follows:

- The subject area is located within the curtilage of a local heritage item which is listed under Part 1 of Schedule 5 of the Mosman LEP 2012 as “Rainforest Aviary”, “Elephant House”, bus shelter and office, floral clock and upper and lower entrance gates’ (item no. I34). The subject area is also located within proximity of local heritage item ‘Ashton Park’ (item no. I458).
- Taronga Zoo contains over 200 heritage items which are listed on the Heritage and Conservation Register for Taronga Zoo, prepared in accordance with Section 170 of the *Heritage Act 1977*. Those which are located within the subject area include:
 - Sandstone Perimeter Wall, item no. 07L
 - Moonstone Relic, item no. 108L
- The Taronga Zoo AMP identifies the subject area within Archaeological Management Zone D.
- The Taronga Zoo AMP does not identify the potential for historical archaeological remains c within the subject area

¹ Communication 23/02/2021, Jean Rice, Heritage Specialist, TC SA

3. HISTORICAL OVERVIEW

The following section is based upon a detailed desktop assessment and a literature review of the history of the subject area. This is reproduced from the Heritage Impact Statement prepared by Urbis (Urbis, 2020).

Early European Development (1788-1911)

Taronga Zoo is located within the County of Cumberland, Parish of Willoughby. In 1837 a stone house known as 'Athol' was erected to the south of the subject area. This was later developed as a leisure destination with a hotel and pleasure garden. A Parish Map dating to c.1850s show that the subject area had by this time been incorporated within a land parcel granted in four allotments to Charles Jenkins and J. Holt (see Figure 12). There is no evidence of structures being erected within the subject area in association with this period.

In 1879, a quarantine station for imported stock occupied a portion of the land to the south. By 1891 two stations were operational within the vicinity of the subject area; one near 'Athol' and another on the corner of Whiting Beach and Bradley's Head Road. A freight tramline was established from Athol Wharf to the stations, which was utilised during zoo construction (GML, 2001).

In the 1890s, large portions of the land surrounding Sydney Harbour were resumed for Military Purposes (Figure 13), including Bradley's Head and the animal quarantine facilities which operated upon it. There is no evidence which suggests that any structures were established within the subject area in association with this period. Following federation in 1901, the Military Reserves were given to the Commonwealth. In 1908, Ashton Park, comprising 142 acres of public park land, was gazetted (Figure 14).



Figure 12 – Historic parish map of Willoughby, c. 1850s. Approximate location of the subject area indicated in blue outline.

Source: HLRV



Figure 13 – 1893-94 Parish Map indicating resumption of land for military purposes. Approximate location of the subject area indicated in red outline.

Source:

Establishment of Taronga Zoo and La Souef’s Directorship (1912–1940)

In April 1912 17 hectares of Crown Land within the north-western component of Ashton Park was rededicated as a zoological garden (Figure 14). The southern component of the subject area was resumed as parkland and the northern component remained within Ashton Park. Ground was broken on the Taronga Zoo site in October 1912 and continued until 1916. Prior to this much of the zoo lands was covered in natural Australian bushland. The Zoo officially opened on Saturday October 7th 1916 (The Sun, 1916).

Figure 15 demonstrates the Zoo in its original plan in 1916, with approximately 23 animal exhibits and the original path network. The subject area was undeveloped. The northern component of the subject area was located outside the northern boundary of the site at this time and was separated by a boundary wall which transected the site. The wall was constructed in the 1930s as an interwar Depression incentive. The wall was unlikely to have contained substantial footings on the grounds that it was of rudimentary construction.²

² Communication /02/2021, Jean Rice, Heritage Specialist, TCSEA

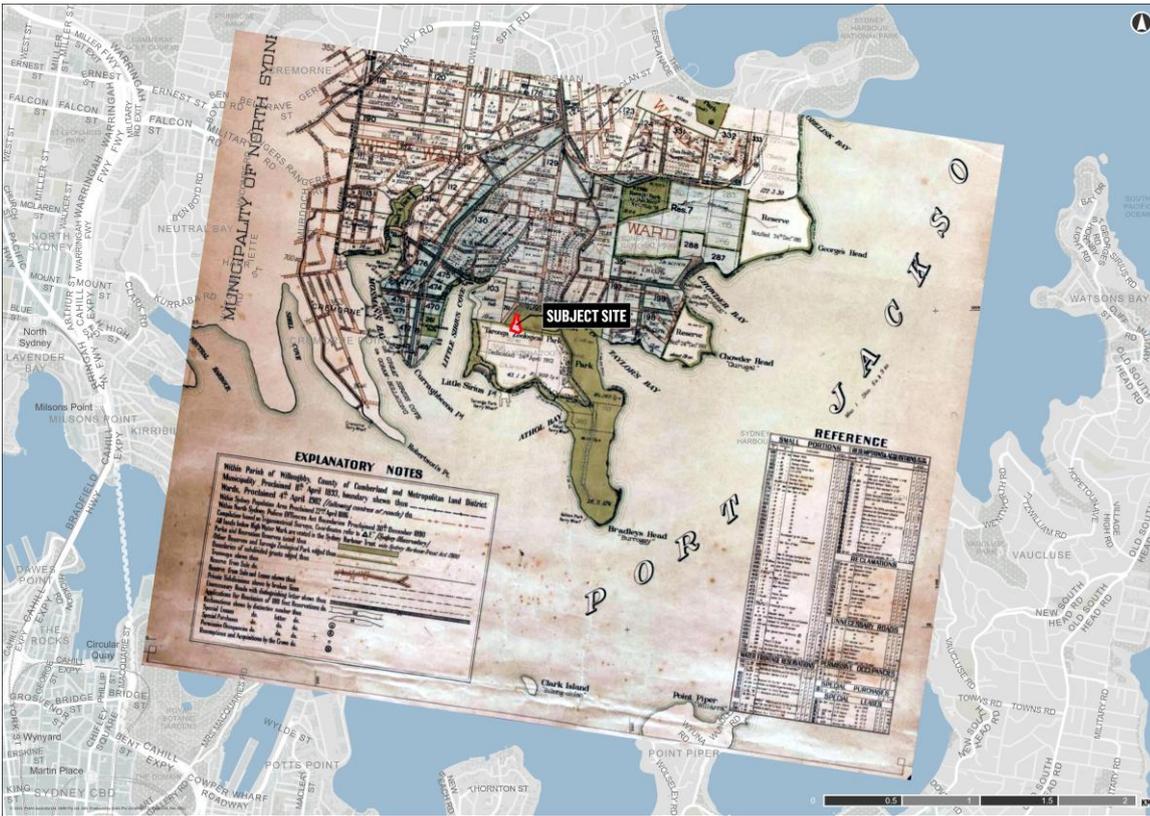


Figure 14 – 1917 Parish Map showing Crown Land, previously part of Ashton Park, which had been rededicated as a zoological park. Approximate location of the subject area indicated in red outline.

Source: Taronga Zoo Archives



Figure 15 -1916 plan of Taronga Zoological Park, approximate location of the subject area is indicated in red outline. Note the location of the northern boundary wall in green which transected the Zoo site at this time.

Source: Taronga Zoo Archives.

Hallstrom's Directorship (1941–1967)

Following the departure of Le Souef in 1939, Taronga Zoo underwent a number of changes under the new director Sir Edward Hallstrom. Rather than the focus on barless exhibits with moats, the moats began to be filled in and chain and wire fences installed to allow visitors to get closer to the animals. Animal enclosures had concrete floors and walls installed (GML, 2006).

A 1969 detail survey of the subject area indicates that the southern portion of the subject area had been developed by this date (Figure 17). A rectangular bird enclosure can be observed within the south-eastern portion of the site and a U-shaped shed was located to the west. A large disused concrete pit occupied the area to the north of these structures. A Camel enclosure and hospital buildings can be observed to the south-east of the subject area. A number of bird enclosures and ancillary structures occupied the area where the current Reptile facility is located.

The northern component of the subject area contained an incinerator, which had been constructed by the 1950s in the area north of the current Reptile facility, today occupied by an asphalt carpark. Figure 18 and Figure 19 indicate the form and sub-surface impacts associated with this feature.

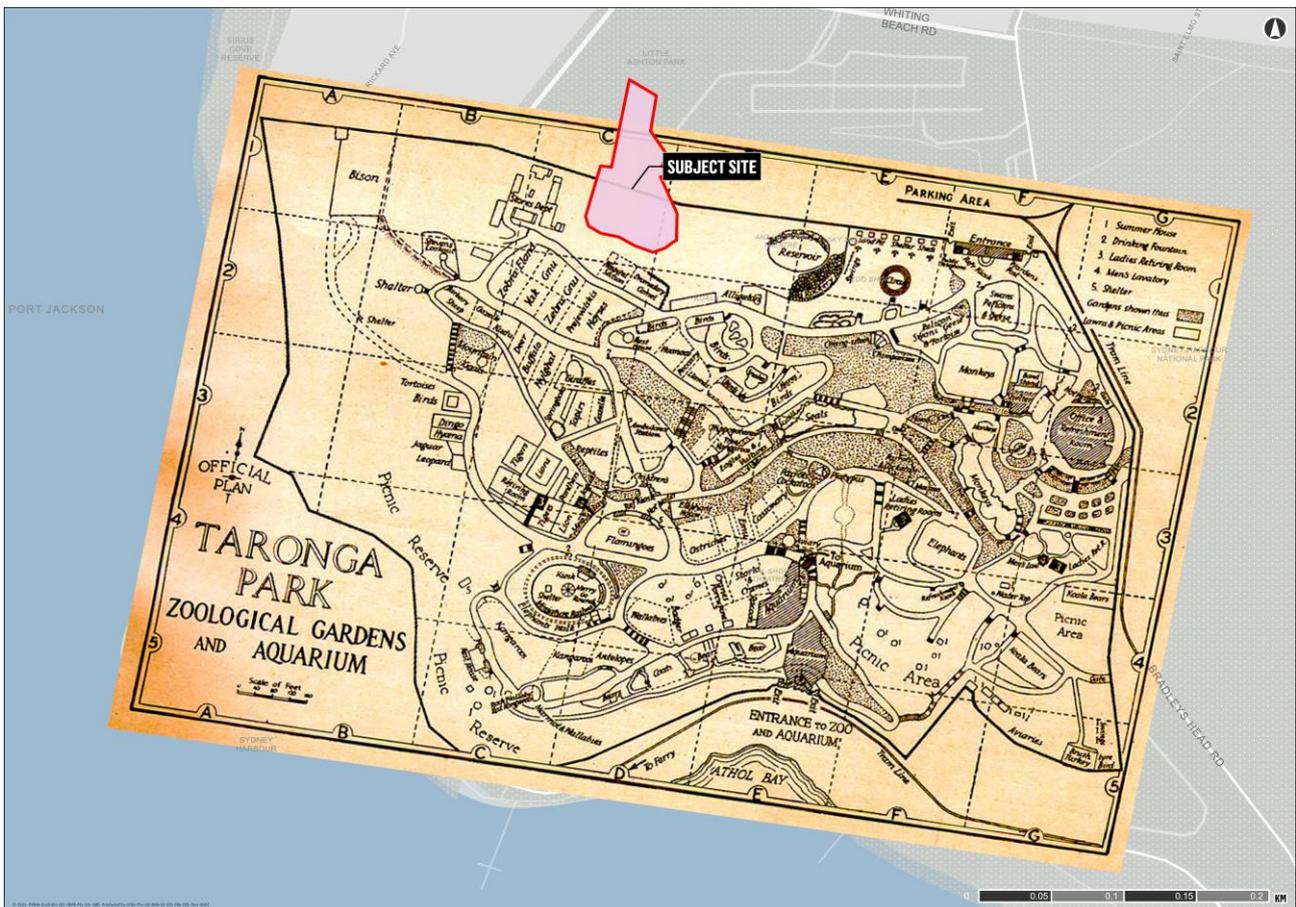


Figure 16 – 1940s plan of Taronga Zoo with location of subject area indicated in red. Note that the site remained undeveloped at this time, with a camel enclosure and hospital established to the south-east.

Source: Taronga Zoo Archives

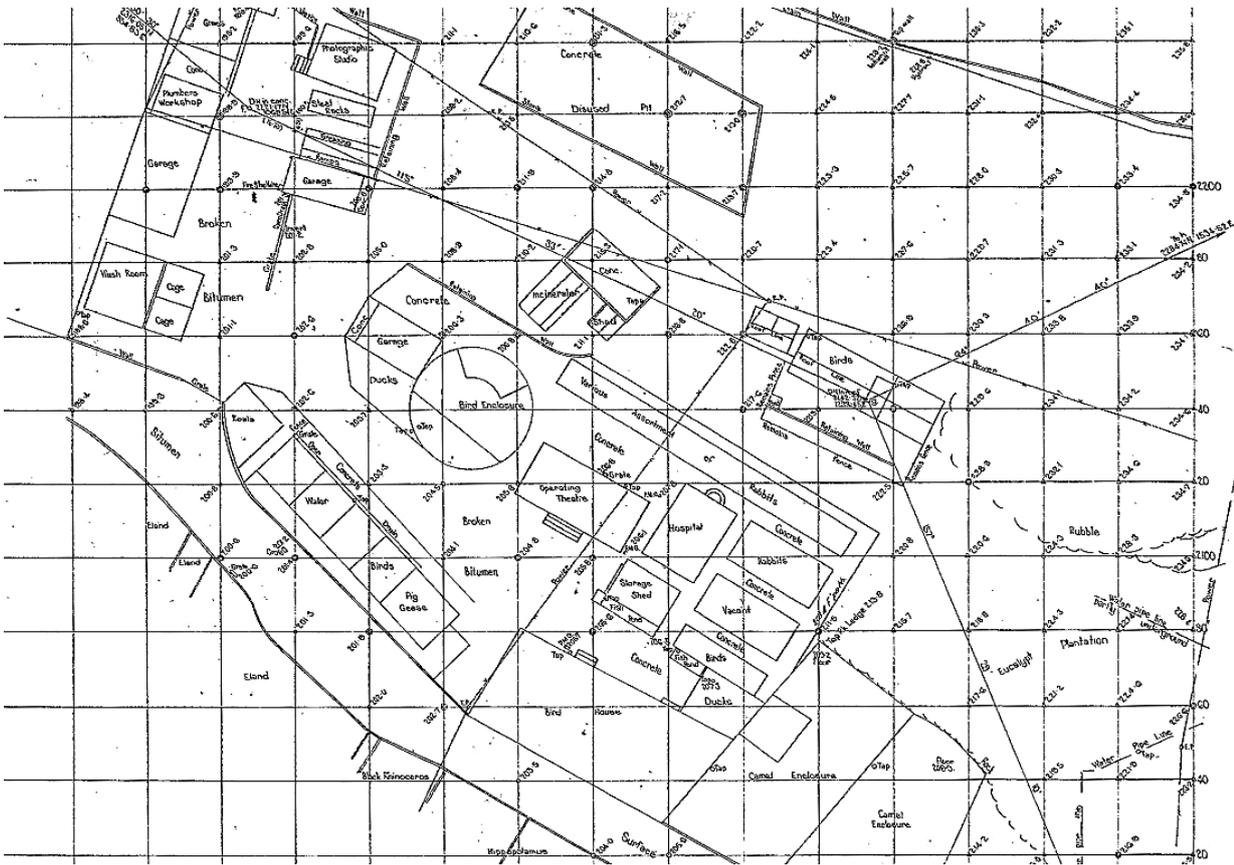


Figure 17 – 1969 survey indicating the location of structures within the subject area including the Camel enclosure, hospital, bird enclosure and incinerator. The eastern component of the subject area remained vegetated at this time.

Source: Taronga Zoo Archives



Figure 18 – 1966 photograph of Hediger incinerator

Source: Taronga Zoo Archives

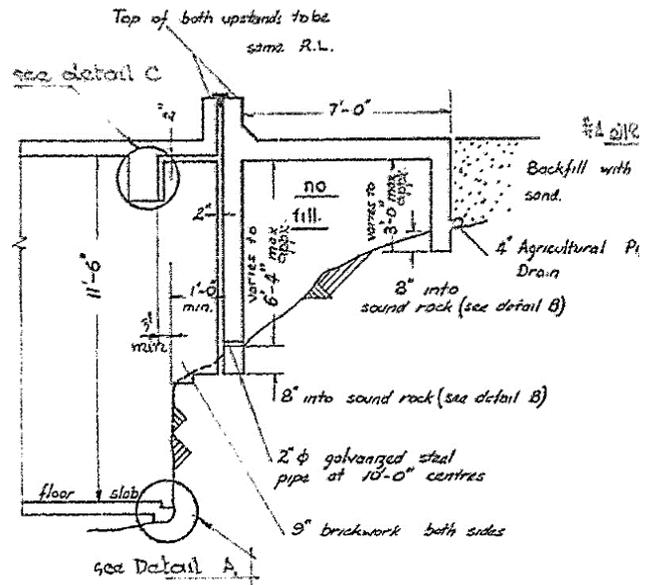


Figure 19 – Cross-section of incinerator showing depth of footings and floor slab and installation of fill

Source: Taronga Zoo Archives

Strahan's Directorship (1967–1986)

In 1967 Dr. Ronald Strahan became Director of Taronga Zoo. Strahan was a pioneer in advocating zoos as cultural scientific institutions and the adaptations to the Zoo which were undertaken during this period reflect this shift in emphasis.

By the 1970s the northern component of the subject area had been incorporated within the Zoo site and the boundary wall removed. The sloped and vegetated landscape had been levelled. Throughout the 1970s and 1980s a number of workshops and storage structures were constructed within the northern component of the subject area. Figure 21 demonstrates that the landscape was levelled, and concrete slabs installed in order to accommodate these structures. Figure 20 provides a detail

A 1968 guidebook indicates that the Camel enclosure remained to the south-east of the subject area.³

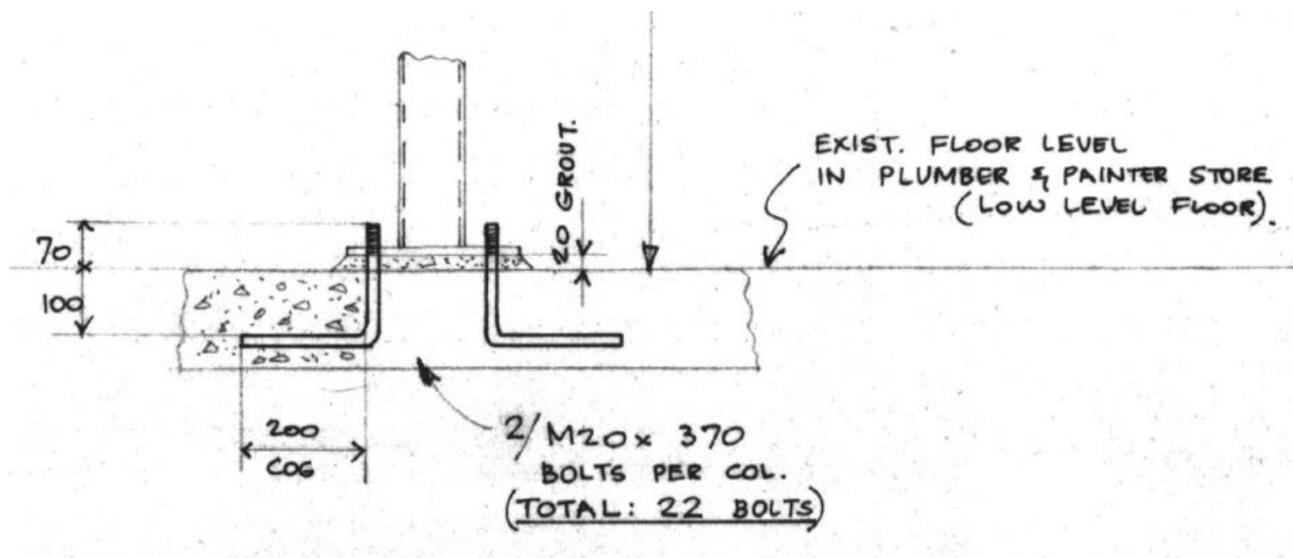


Figure 20 – Detail of footing for Carpenter's Workshop/ Store, 1986

Source: Taronga Zoo Archives

³ 1968 Guidebook, Taronga Zoo, Taronga Zoo Archives

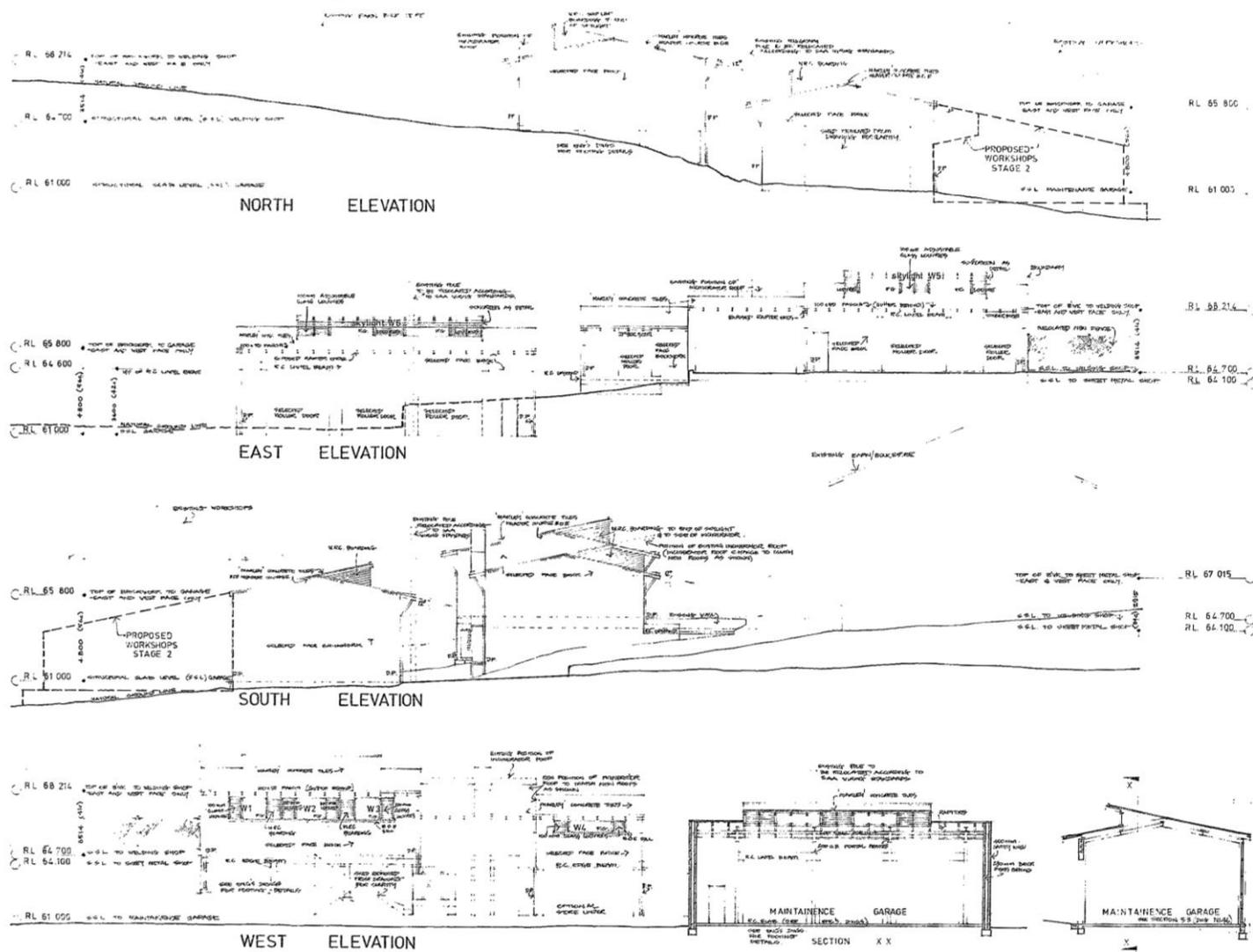


Figure 21 – Elevations of the 1985 workshops and garage

Source: Taronga Zoo Archives

Kelly's Directorship to Present (1987-Present)

Under Dr John Kelly's directorship the Zoo underwent a significant capital works program.

By 2016 the Camel enclosure and associated structures to the south of the subject area had been removed and a large Serpentaria constructed (Figure 22). Figure 23 indicates the extent of excavation and importation of fill.

The ring road along the south-eastern boundary had been partially removed and the animal enclosures to the south-east of the subject area had been removed and replaced with a large chimpanzee enclosure. The northern component of the subject area remained occupied by workshops and storage structures.



Figure 22 - 2016 Guidebook indicating that a large Serpentaria had been constructed within the subject area by this time. Approximate location of the subject area indicated in red outline.

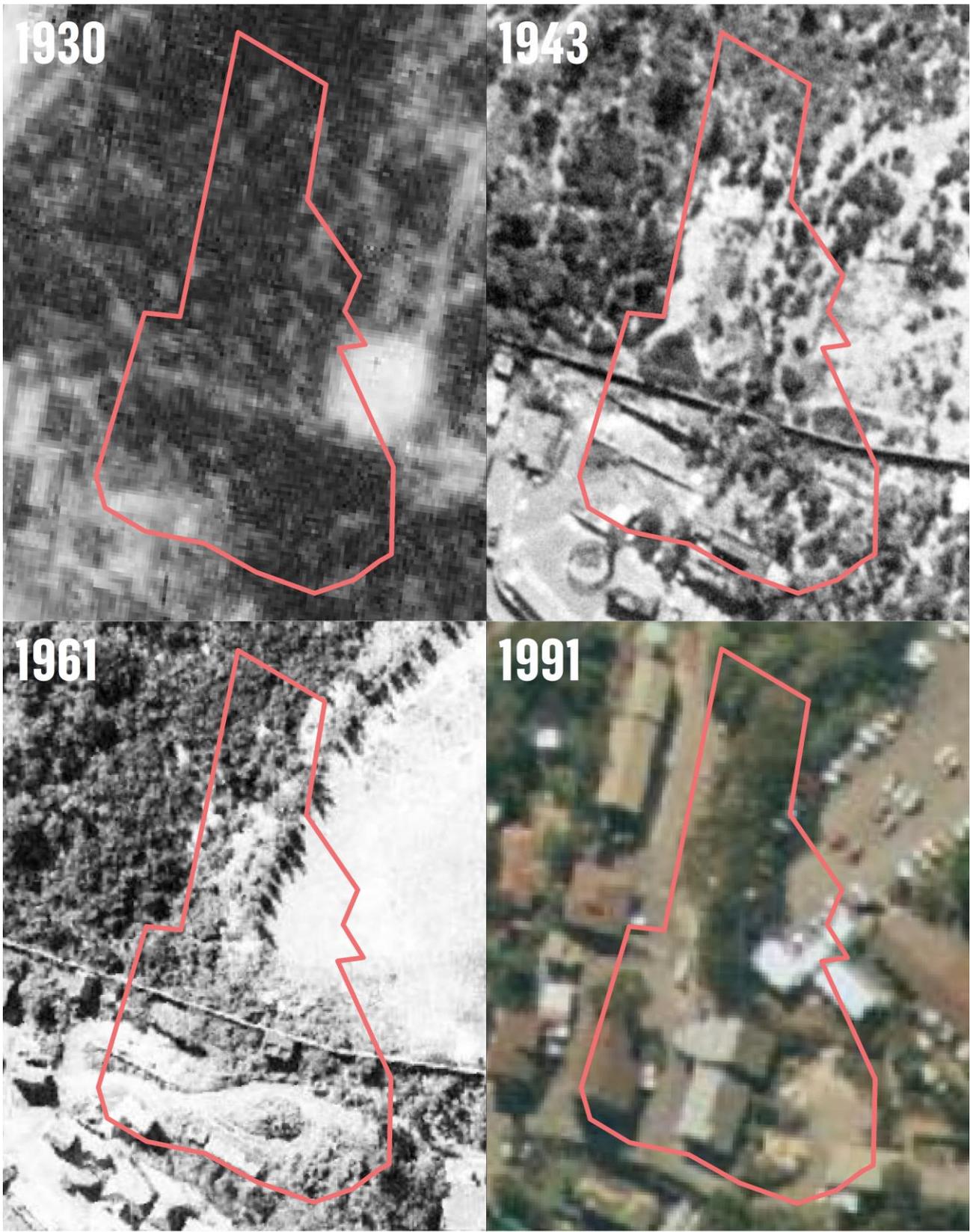
Source: Taronga Zoo Archives

3.1. HISTORIC AERIAL ANALYSIS

The development of facilities within the subject area has caused substantial levels of ground disturbance. This is demonstrated through the analysis of historic aerials. Historic aerial images from 1930, 1943, 1961 and 1991 were analysed to develop an understanding of disturbance (see Figure 24). A summary of this analysis is included in Table 4.

Table 4 – Analysis of historical aerials

Year	Observation
1930	The 1930 aerial photograph indicates that the subject area was densely vegetated. The northern boundary wall of the Zoo can be observed transecting the site.
1943	By 1943 a number of structures can be observed within the southern component of the subject area. The northern boundary wall remained extant. The rectangular bird enclosure identified in the 1969 detail survey (Figure 17) can be observed within the south-eastern portion of the site and a U-shaped shed to the west. The large disused concrete pit can also be observed to the north of these structures. The Dromedary Camel enclosure and Hospital can be observed to the south of the subject area. The bird enclosures and a number of ancillary structure occupied the area where the current Reptile facility is located.
1961	The northern section of the subject area remained largely unchanged, with some vegetation clearance evident in the eastern portion. The concrete pit appears to have been infilled and the incinerator can be observed to the south of this feature. The bird enclosure located within the south-eastern portion of the site appears to have been removed by this date.
1991	The subject area had undergone significant changes by 1991. The northern component of the subject area had been incorporated within the Zoo site and the boundary wall removed. The sloped and vegetated landscape had been levelled and a number of workshops and storage structures erected. The incinerator had also been removed by this date.



GDA 1994 MGA Zone 56



Project No: P0031212
 Project Manager: Balazs hansen/

■ Subject Area

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HISTORICAL AERIAL PHOTOGRAPHS
 Taronga Wildlife Hospital . The Nutrition Centre
 Taronga Conservation Society

Figure 24 – Historic Aerials

4. LITERATURE REVIEW

The subject area has not been assessed under any previous archaeological projects.

The following section of the assessment provides an analysis of the results of pertinent archaeological investigations previously conducted in the vicinity of the subject area. These assessments were selected for their proximity to the subject area and similar land use across time. Each selected assessment has involved excavation and/or monitoring programs and the identification of archaeological materials.

4.1. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Douglas Partners, 2000, *Geotechnical Investigation, Backyard to Bush Precinct, Taronga Zoo, Mosman*

In 2000 Douglas Partners was engaged to prepare a Geotechnical Investigation report for the proposed Backyard to Bush Precinct. 25 boreholes were drilled across the Zoo site, revealing a relatively uniform subsurface soil profile. The stratigraphy of the site was identified as consisting of:

- Upper layer of topsoil.
- Well-compacted brown sands and crushed sandstone at depths of 30cm – 1.5m.
- Sand and clayey sand overlaying weathered sandstone bedrock at depths of 70cm – 2m.

GML, 2004, *Taronga Zoo Archaeological Management Plan*

In respect of historical archaeological potential, the Taronga Zoo AMP considered the results of a series of geotechnical investigations, and test excavations and monitoring undertaken in association with a proposed 'Backyard to Bush Precinct' in the south-eastern part of the site, as a means of establishing the archaeological sensitivity of the site as a whole.

The AMP characterises the Zoo site as consisting of sloping sandstone topography which has been levelled through cutting and filling in association with the establishment of the Zoo in the early 20th century. Areas which have been excavated down to bedrock are thus identified as archaeologically sterile. Areas in which soil profiles survived, but which have been heavily disturbed by earthworks and construction, are identified as having medium – low potential. The AMP asserts that there is generally high potential for the survival of historical archaeological features associated with former Zoo structures across the site. This is based on the outcomes of test excavations, which uncovered a small intact sandstone wall.

The Taronga Zoo AMP identifies the subject area within the following historical archaeological management zone (Figure 10):

Zone D

This Historical Archaeological Management Zone encompasses the rest of the site, where excavations for the foundations of previous Zoo structures have reached down to bedrock or culturally sterile soil profiles, or where there has been little or insignificant historical development. Zone D is not expected to contain any historical material culture and is therefore assessed as having no archaeological sensitivity.

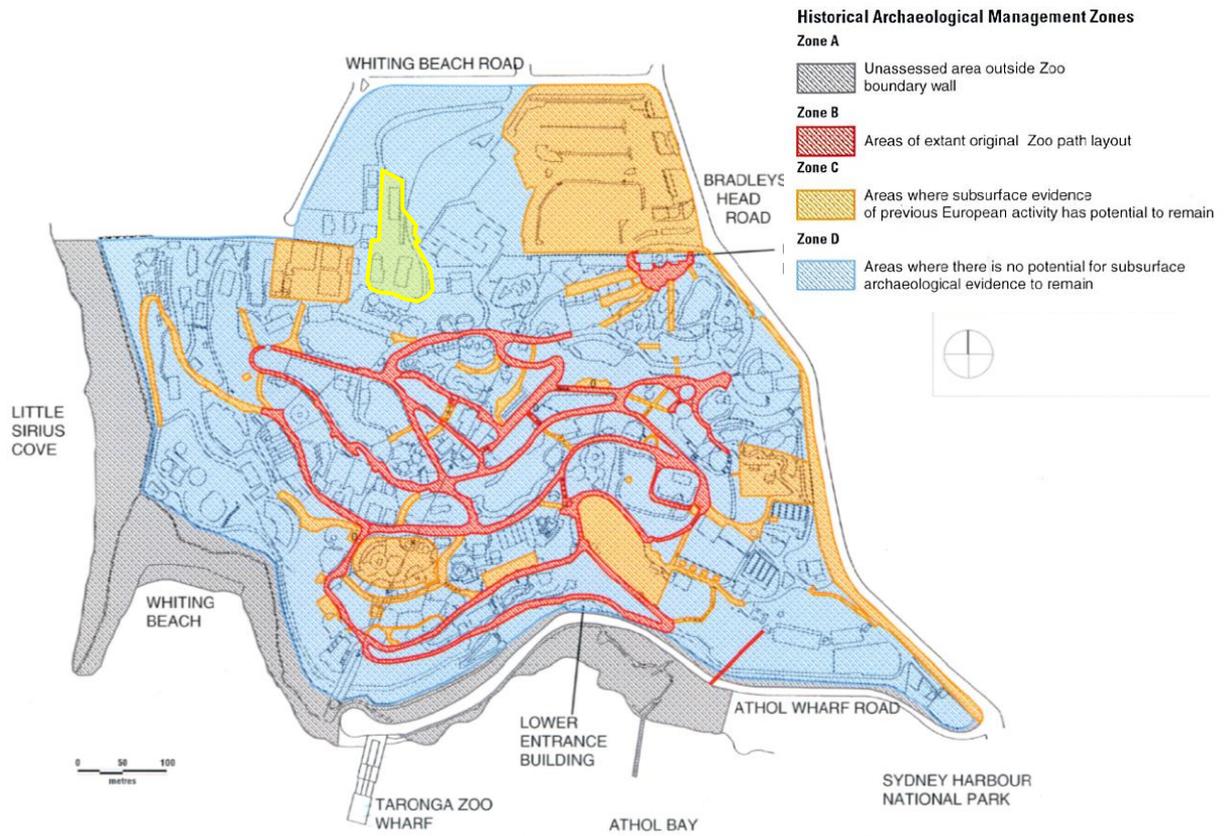


Figure 25 – Historical archaeological management zones. Approximate location of the subject area indicated in yellow outline.

Source: Taronga Zoo AMP 2004

The Taronga Zoo AMP does not identify the potential for historical archaeological remains within the subject area (Figure 11):

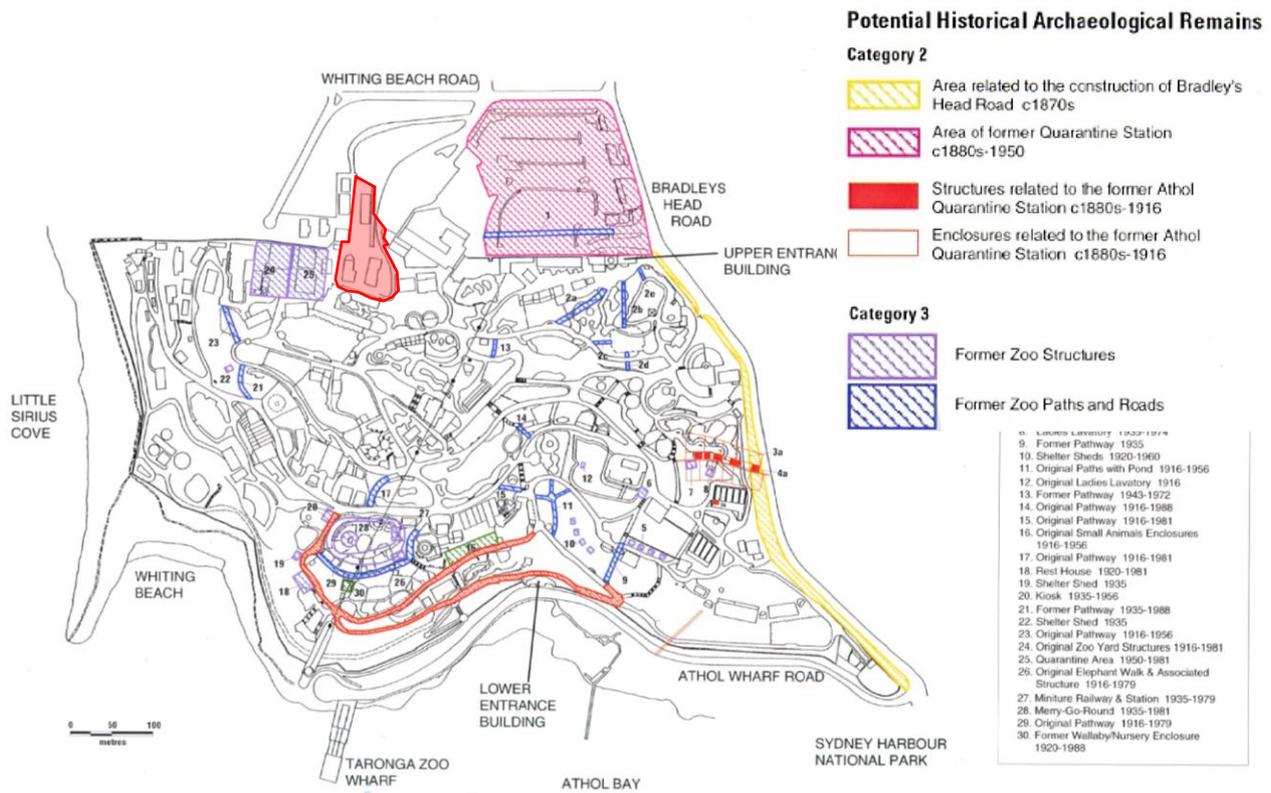


Figure 4.7 Taronga Zoo Potential Historical Archaeological Remains

Figure 26 - Potential historical archaeological remains. Approximate location of the subject area indicated in red outline.

Source: Taronga Zoo AMP 2004

Note: It is understood that the above maps (Figure 10 & Figure 11), which have been extracted from the 2004 CMP, incorrectly locate the former quarantine structure within the footprint of the subject area on the grounds that the historical overlay was incorrectly fitted to the map of the existing site.⁴

GML, 2006, Taronga Zoo, Australia Coastline Precinct, Archaeological Monitoring Report

In 2010 GML was commissioned by the ZPB NSW to monitor ground disturbance of works associated with the redevelopment of the 'Australian Coastline Precinct' (now known as the Great Southern Oceans Precinct), located approximately 100m south-west of the subject area.

The 2004 AMP had identified areas of historical archaeological potential within the proposed Australian Coastline Precinct (Figure 27). These included the following:

- **AF1 – former pathway / staircase:** constructed 1916 as part of the original path layout of the Zoo. Appeared on guide maps and other historical documentation until c. 1972.
- **AF2 – former animal enclosure:** designated for aviaries from the early phase of development of the Zoo. Date of construction unknown.

Archaeological monitoring was undertaken in two phases, as follows:

Phase 1 – AF1

Investigation revealed that this area had been subject to significant disturbance and that most evidence of this feature had been removed. A few sandstone blocks in an alignment at the top of the slope may have

⁴ Communication 23/02/2021, Jean Rice, Heritage Specialist, TCSA

been related to this feature. No reinstatement or additional recordation of this feature was pursued, and it was determined that redevelopment of this area could proceed.

Phase 2 – AF2

Location of this feature had been subject to some disturbance in association with the construction of the adjacent aquarium building. The location of this feature was characterised by fill, which had been installed after the removal of the former animal enclosure. No evidence of this feature was uncovered besides a few remnant concrete footings. No additional conservation or recordation was undertaken for this feature.

The monitoring works exposed an early concrete path with associated kerbing and guttering to the south of AF2. It was determined that this path reflects the original path layout of the Zoo (1912-1916), although it had been resurfaced with concrete at a later date. With the exception of this feature, the monitoring yielded results which were consistent with the available historical information for the site although and revealed that only fragmentary evidence of these features survives.

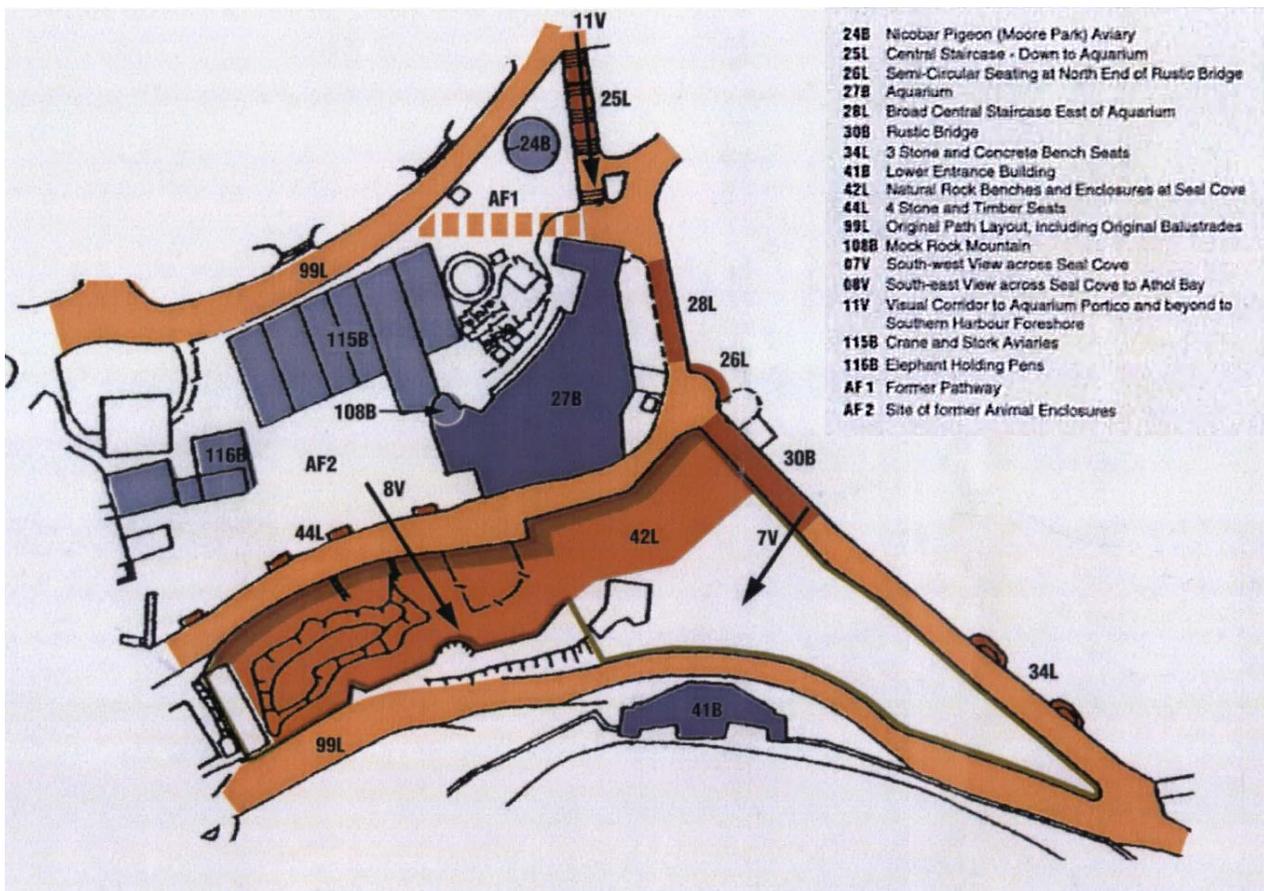


Figure 27 – Location of areas of archaeological potential in relation to the Australian Coastline Precinct

GML, 2010, Taronga Zoo, Upper Entrance Precinct, Archaeological Monitoring Report

In 2010 GML was engaged by Taronga Zoo to monitor ground disturbance of works associated with the redevelopment of the 'Taronga Zoo Upper Entrance Precinct' in preparation for the construction of a multi-storey carpark in the area. The Upper Entrance Precinct is located approximately 50m north of the subject area.

Report responded to the AMP and HIS for the Upper Entrance Precinct which identified the potential for a number of Historical archaeological resources, including:

- an animal quarantine station dating to the late 19th century;
- a tramline that operated late 19th – early 20th century; and

- historic roads, paths and landscaping.

Archaeological monitoring undertaken within the proposed Upper Entrance Precinct revealed a high degree of disturbance. The area in the vicinity of the garden beds consists of a 300-450m layer of introduced loam overlaying sandstone bedrock. Likewise, the main area carpark is comprised of an asphalt surface overlaying a shallow (300mm) layer of gravelly fill which, in turn, overlays sandstone bedrock. These modifications to the site date to the late 20th century.

GML, 2011, Taronga Zoo, Upper Entrance Precinct, Stage 2 Archaeological Monitoring Report

In 2011 GML was engaged by the ZPB NSW to undertake a second stage of monitoring in association with the redevelopment of the 'Taronga Zoo Upper Entrance Precinct'. The Upper Entrance Precinct is located approximately 50m north of the subject area.

The second stage of monitoring was undertaken in response to previous archaeological assessments which had indicated the potential for remains of the late-19th century animal quarantine station on the site. Although remnants of this feature were not located, a number of historical archaeological relics were exposed as part of the second stage of monitoring. These included:

- a railway ballast related to the tram line that ran to the zoo until 1959;
- concrete bases of shelter sheds in the former picnic area below the Reptile House;
- a concrete footing at the Upper Entrance Gateway; and
- a circular concrete turntable in the Western Wing of the Upper Entrance Building.

Upon assessment of the archaeological significance of these features, it was determined that they would not be retained in situ, with the exception of the concrete turntable.

4.2. SUMMARY OF PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

In summary, previous archaeological investigations in the vicinity of the current subject area, with similar land use history or environmental conditions, have identified high levels of disturbance associated with later adaptations of the Zoo, with soil profiles consisting predominantly of imported fill.

This is consistent with the findings of the Taronga Zoo AMP, which established that the subject area is '*not expected to contain any historical material culture and is therefore assessed as having no archaeological sensitivity.*'

It is of note, however, that the Taronga Zoo AMP identifies high potentiality for the survival of historical archaeological relics across the Taronga Zoo site, including within disturbed profiles.

5. ARCHAEOLOGICAL POTENTIAL

Historical archaeological potential is defined as:

The degree of physical evidence present on an archaeological site, usually assessed on the basis of physical evaluation and historical research (Heritage Office and Department of Urban Affairs and Planning 1996).

Archaeological research potential of a site is the extent to which further study of relics likely to be found is expected to contribute to improved knowledge about NSW history which is not demonstrated by other sites, archaeological resources or available historical evidence. The potential for archaeological relics to survive in a particular place is significantly affected by later activities that may have caused ground disturbance. These processes include the physical development of the site (for example, phases of building construction) and the activities that occurred there. The archaeological potential of the subject area is assessed based on the background information presented in Section 3, and graded as per:

- **Nil Potential:** the land use history demonstrates that high levels of ground disturbance have occurred that would have completely destroyed any archaeological remains. Alternatively, archaeological excavation has already occurred, and removed any potential resource;
- **Low Potential:** the land use history suggests limited development or use, or there is likely to be quite high impacts in these areas, however deeper sub-surface features such as wells, cesspits and their artefact bearing deposits may survive;
- **Moderate Potential:** the land use history suggests limited phases of low to moderate development intensity, or that there are impacts in the area. A variety of archaeological remains is likely to survive, including building footings and shallower remains, as well as deeper sub-surface features;
- **High Potential:** substantially intact archaeological deposits could survive in these areas.

The potential for archaeological remains or 'relics' to survive in a particular place is significantly affected by land use activities that may have caused ground disturbance. These processes include the physical development of the site (for example, phases of building construction) and the activities that occurred there. The following definitions are used to consider the levels of disturbance:

- **Low Disturbance:** the area or feature has been subject to activities that may have had a minor effect on the integrity and survival of archaeological remains;
- **Moderate Disturbance:** the area or feature has been subject to activities that may have affected the integrity and survival of archaeological remains. Archaeological evidence may be present, however it may be disturbed;
- **High Disturbance:** the area or feature has been subject to activities that would have had a major effect on the integrity and survival of archaeological remains. Archaeological evidence may be greatly disturbed or destroyed.

5.1. DISCUSSION OF ARCHAEOLOGICAL POTENTIAL

Historical sources indicate that by 1850 the subject area had been incorporated within Charles Jenkins and J. Holt land grant. The site was then resumed for military purposes in the 1890s, gazetted as Commonwealth land (part of Ashton Park) in 1908 and was rededicated as a zoological park in 1912. There is no available evidence which suggests that permanent structures were erected within the subject area in association with this early period, although early fencing, paths and casual finds may survive.

Historical research has demonstrated that the subject area was not developed in association with the establishment of the zoo under La Souef's directorship (1912-1940). The northern component of the subject area was located outside the northern boundary of the zoo and consisted of dense vegetation. There is low potential for remnants of the original northern boundary wall which transected the subject area during this period. The wall was unlikely to have contained substantial footings on the grounds that it was of rudimentary construction.

The subsequent phase of development under Hallstrom's directorship (1941-1966) saw significant development within the subject area. A rectangular bird enclosure and U-shaped shed were erected within the southern portion and a large disused concrete pit occupied the area to the north of these structures. Site survey (see Section 7) has revealed that the brick administration buildings which currently occupy this portion of the site are partially built into the slope, likely resulting in the removal of any earlier structural remains in this location. The south-eastern portion of the subject area and location of the ring road has been subject to lower levels of disturbance and there is greater potential for archaeological resources in this location. There is therefore low-moderate potential for foundations, footings and services associated with these early structures beneath the existing road surface and warehouse structures which currently occupy the site.

An incinerator was constructed within the northern component of the subject area by the 1950s, in an area which is today occupied by a bitumen carpark. The brick lined chamber of this structure and floor slab were located at some depth and there is moderate-high potential for evidence of this feature beneath the existing carpark.

The period which encompasses Strahan's directorship (1967-1974) saw the subject area undergo further changes. By the late 20th century, the northern component of the subject area had been incorporated within the Zoo, vegetation cleared, an asphalt road and carpark established, and a number of workshops and storage structures erected. Although these structures were relatively superficial, substantial excavation and regrading works would have been required in order to establish a level surface, thus resulting in the removal of archaeologically sensitive soil profiles. Evidence of this phase remains extant.

Under Kelly's Directorship (1987 onwards) the subject area underwent few significant changes.

The subject area has undergone significant disturbance since the mid-20th century. The steep sandstone topography of the site meant that sections had to be cut down to bedrock and fill imported for the purpose of creating level surfaces. A number of structures which were erected on the site would have required additional excavation and grading works for the purpose of installing level ground slabs and footings. Aerial photography further indicates the extent of vegetation clearance and earthworks which were undertaken in association with the development of the site.

The Taronga Zoo Archaeological Management Plan (AMP) identifies the subject area as '*not expected to contain any historical material culture and is therefore assessed as having no archaeological sensitivity.*' More generally, however, it identifies the Taronga Zoo site as having high potential for the survival of historical archaeological remains, even in disturbed soil profiles. Archaeological monitoring and test excavations undertaken within the vicinity of the subject area appear to support this assumption, having exposed a number of historical archaeological features.

The archaeological potential of the subject area is therefore determined to be low-moderate overall. In particular, there is potential for evidence of the brick-lined chamber associated with the former incinerator located within the southern portion of the site.

5.2. SUMMARY OF ARCHAEOLOGICAL POTENTIAL

The below table presents a summary of potential archaeological resource and condition of remains within the subject area.

Table 5 – Assessment of Archaeological Potential

Phase	Potential Archaeological Resource	Integrity of archaeological resource	Potential
Early European Development (1788-1911)	Rubbish dumps, discard items, remnant fencing and paths	<p>It is considered unlikely that historical archaeological features associated with early land grants would survive within the subject area due to subsequent disturbance.</p> <p>Although animal quarantine facilities were located within the vicinity of the subject area, it is anticipated that these facilities would have been contained and would not have occupied the site. Likewise, there is no evidence which suggests that any permanent structures or modifications were made to the subject area in association with the resumption of the land for military purposes, with the construction of emplacements confined to the headland.</p>	Low
Establishment of Taronga Zoo and Directorship of La Souef (1912-1940)	Remnant fencelines, casual finds	<p>During this phase the original plan for Taronga Zoo was established. The subject area was undeveloped. The northern component of the subject area was located outside the northern boundary of the zoo and consisted of dense vegetation.</p> <p>There is low potential for remnants of the original boundary wall which defined the northern boundary of the Zoo and transected the subject area during this period (Figure 15). The wall was unlikely to have contained substantial footings on the grounds that it was of rudimentary construction.</p>	Low
Hallstrom's Directorship (1941-1966)	Foundations, footings and services associated with bird enclosure and shed.	<p>By 1943 a rectangular bird enclosure and U-shaped shed were constructed within the southern portion of the subject area. A large concrete pit occupied the area to the north of these structures (Figure 17). There is potential for foundations, footings and services associated with these early structures.</p> <p>The northernmost component of the subject area remained outside the northern boundary of the zoo at this time.</p>	Low-Moderate

Phase	Potential Archaeological Resource	Integrity of archaeological resource	Potential
	Brick lined chamber and floor slab of former incinerator.	The northern component of the subject area contained an incinerator, which had been constructed by the 1950s in the area north of the current Reptile facility which is today occupied by an asphalt carpark. Foundations of this feature, including the concrete floor slab and brick-lined chamber walls, may be located beneath the existing asphalt surface.	Moderate-High
Strahan's Directorship (1967-1986)	Extant workshops and storage structures.	By the 1970s the northern component of the subject area had been incorporated within the Zoo. The northern boundary fence had been removed, vegetation cleared, and an asphalt road established. Throughout the 1970s and 1980s a number of workshops and storage structures were constructed within the northern component of the subject area. The landscape was levelled, and concrete slabs installed in order to accommodate these structures (Figure 21). These structures remain extant.	High
Kelly's Directorship to Present (1987-Present)	No archaeological resources identified.	The workshops and storage structures within the northern portion of the subject area remained extant throughout this period.	Nil

6. ARCHAEOLOGICAL SIGNIFICANCE

6.1. TERMS AND DEFINITIONS

The concept of archaeological significance is independent of archaeological potential. For example, there may be ‘low potential’ for certain relics to survive, but if they do, they may be assessed as being of ‘high (State) significance’.

Archaeological significance has long been accepted as linked directly to archaeological (or scientific) research potential: a site or resource is said to be scientifically significant when its further study may be expected to help answer questions. Whilst the research potential of an archaeological site is an essential consideration, it is one of a number of potential heritage values which a site or ‘relic’ may possess. Recent changes to the Heritage Act 1977 (Section 33(3) (a)) reflect this broader understanding of what constitutes archaeological significance by making it imperative that more than one criterion be considered.

The below assessment of archaeological significance considers the criteria, as outlined in the NSW Heritage Branch publication *Assessing Significance for Historical Archaeological Sites and ‘Relics’*. Sections which are extracted verbatim from this document are italicized.

For the purposes of this assessment, significance is ranked as follows:

- **No Significance** – it is unlikely that any archaeological resources recovered will be attributed significance in accordance with the assessment criteria on a state or local level.
- **Local Significance** – it is likely that archaeological resources recovered will be significant on a local level in accordance with one or more of the assessment criteria.
- **State Significance** – it is likely that archaeological resources recovered will be significant on a state level in accordance with one or more of the assessment criteria.

The following Criteria are used to assess archaeological significance (from *Assessing Significance for Historical Archaeological Sites and ‘Relics’*, Heritage Branch NSW).

Table 6 – Significance Criteria

Criterion Letter	Criterion	Definition
E	<i>Archaeological Research Potential</i>	<i>Archaeological research potential is the ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site and its ‘relics’</i>
A, B & D	<i>Associations with individuals, events or groups of historical importance</i>	<i>Archaeological remains may have particular associations with individuals, groups and events which may transform mundane places or objects into significant items through the association with important historical occurrences.</i>
C	<i>Aesthetic or technical significance</i>	<i>Whilst the technical value of archaeology is usually considered as ‘research potential’ aesthetic values are not usually considered to be relevant to archaeological sites. This is often because until a site has been excavated, its actual features and attributes may remain unknown. It is also because aesthetic is often interpreted to mean attractive, as opposed to the broader sense of sensory perception or ‘feeling’ as expressed in the Burra Charter. Nevertheless, archaeological excavations which reveal highly intact and</i>

Criterion Letter	Criterion	Definition
		<i>legible remains in the form of aesthetically attractive artefacts, aged and worn fabric and remnant structures, may allow both professionals and the community to connect with the past through tangible physical evidence</i>
A, C, F & G	Ability to demonstrate the past through archaeological remains	<i>Archaeological remains have an ability to demonstrate how a site was used, what processes occurred, how work was undertaken and the scale of an industrial practice or other historic occupation. They can demonstrate the principal characteristics of a place or process that may be rare or common.</i>

6.2. ASSESSMENT OF ARCHAEOLOGICAL SIGNIFICANCE

The following table assesses the significance of potential archaeological resources across the site in accordance with the definitions in Table 6 above.

Table 7 – Assessment of Significance

Criterion	Discussion
Archaeological Research Potential	<p>Although it is considered unlikely that historical archaeological features associated with the early land grants would survive within the subject area, these may have significance at a State level for their ability to provide information about the earliest European settlement of the Mosman area which cannot be garnered from available historical sources.</p> <p>Historical archaeological resources associated with the former bird enclosure are unlikely to provide additional information in relation to evolving zoological practice and philosophy.</p> <p>Evidence of the former incinerator located within the northern component of the subject area, in addition to bone fragments and other waste deposits, may yield additional information in relation to historical zoological incineration practices.</p>
Associations with individuals, events or groups of historical importance	Should high integrity archaeological resources be exposed which are associated with the mid-20 th century bird enclosure and incinerator, these may have significance for their association with the adaptations to the Zoo which were undertaken under Hallstrom's Directorship (1941-1966).
Aesthetic or technical significance.	No historical archaeological resources have been identified which satisfy this criterion.
Ability to demonstrate the past through archaeological remains	Historical archaeological resources associated with early land grants may have significance at a State level for their ability to reflect the earliest European settlement of the Mosman area.

Criterion	Discussion
	<p>Evidence of the mid-20th century bird enclosure would not meet the threshold for local significance in terms of their ability to demonstrate the historical development of Taronga Zoo.</p> <p>Historical archaeological resources associated with the former Incinerator may have local significance for their ability to reflect the earliest phase of zoological veterinary activities within the Zoo site.</p>

6.3. STATEMENT OF ARCHAEOLOGICAL SIGNIFICANCE

Although it is It is considered unlikely that historical archaeological features associated with early land grants would survive within the subject area, these may have significance at a State level for their ability to reflect and provide information about the earliest European settlement of the Mosman area which cannot be obtained from available historical sources.

Should high integrity archaeological resources be exposed which are associated with the mid-20th century bird enclosure and incinerator, these may have local significance for their association with the adaptations to the Zoo which were undertaken under Hallstrom’s Directorship (1941-1966).

Historical archaeological resources associated with the former Incinerator may have local significance for their ability to reflect the earliest phase of zoological veterinary activities within the Zoo site.

7. SITE INSPECTION

A site inspection of the subject area was undertaken on 23 February 2021. The inspection confirmed that the subject area has not been significantly modified since the late 20th century.

The topography of the subject area slopes gradually to the south and west. The southern component of the site contains a ring road which terminates at a ledge located immediately to the north of the reptile house (Figure 28 & Figure 29). The topography here steps down dramatically to the south.

State heritage item 'Sandstone Perimeter Wall' (item no. 07L) is located within the eastern portion of the subject area. This is a sandstone block retaining wall with chisel marks.

A series of brick administration buildings with pitched roofs are located within the southern portion of the subject area. Those located within the western section appear to have been built into the hill (Figure 30). A bitumen road leading north is lined by corrugated metal sheds (Figure 31). These are currently used for workshop and storage purposes. Comparison with a mid-19th century map (Figure 12) suggests that this area has been levelled. The road continues north and beyond the historical northern boundary of the Zoo.



Figure 28 – The southern component of the site contains a ring road which terminates to the north of the reptile house.



Figure 29 – Ring road within southern portion of subject area.



Figure 30 – State heritage item 'Sandstone Perimeter Wall' (item no. 07L) within the eastern portion of the subject area.



Figure 31 – Brick administration and storage buildings located within southern portion of subject area.



Figure 32 – Brick administration and storage buildings located within southern portion of subject area.



Figure 33 – A road to the north of the reptile house separates a series of corrugated metal sheds and brick structures which are currently used for storage purposes.

8. ARCHAEOLOGICAL IMPACT ASSESSMENT

Construction of the proposed Nutrition Centre will include:

- Demolition of existing structures.
- Service upgrades and rearticulation.
- Clearance of vegetation.
- Construction of new, multi-storey Nutrition Centre building.
- Hard and soft landscaping.
- Provisions for future connections to and from the proposed future Wildlife Hospital.

The greatest extent of excavation associated with the proposal relates to the first-floor pump room, lift, lobby and stairwell within the south-eastern portion of the subject area (see Figure 4 and Figure 7). These will reach a depth of approximately 5-8 metres below the existing ground surface. A masonry and concrete tunnel will extend east from the lobby, connecting with the proposed Wildlife Hospital (Figure 4). The second floor will be partially built into the hillside and will require that the ground be excavated to approximately 3.5 metres depth from the highest point of the slope at the building's eastern frontage (Figure 7).

Overlays of the first (Figure 34) and second (Figure 35) floor site plans on a 1943 aerial photograph indicate that the excavation works will be located within the footprint of the former bird enclosure. This section of the site was subject to moderate-high levels of disturbance in the late 20th century, including levelling of the steep topography for the purpose of installing the carpark and extant buildings. The assessment of archaeological potential (see Section 5) has therefore determined that there is low-moderate potential for evidence of the former bird enclosure in this location. Based on the depth of proposed excavation for the installation of the first floor (5-8 metres), it is anticipated that any surviving archaeological resources in this location would be exposed during works. The assessment of significance (see Section 6) has established that high integrity, legible evidence of this feature may have local significance for its ability to reflect adaptations to the Zoo under Hallstrom's Directorship (1941-1966). This is considered unlikely, however, on the grounds that late 20th century development is likely to have resulted in its removal or dislocation.

An overlay of the first (Figure 36) and second (Figure 37) floor site plans on a 1961 aerial photograph reveal that the proposed excavation and grading works would be located to the south-east, and outside the footprint of, the former incinerator. Although there is moderate-high potential for the brick lined chamber and floor slab of the former incinerator in this location, it is likely that these features are located at some depth beneath the existing road base and brick administration building. There is nil potential for these potential archaeological features to be impacted by the proposed development.

Based on the above observations, it is anticipated that there is low-moderate potential for the proposal to impact evidence of the former bird enclosure within the south-eastern portion of the site. In the unlikely event that high integrity, legible remains of this feature are exposed, these may meet the threshold for local significance.



Figure 34 – Overlay of first floor plan on 1943 aerial photograph. Note the former bird enclosure (indicated with arrow) within the footprint of the proposed excavation works.



Figure 35 – Overlay of second floor plan on 1943 aerial photograph. Note the former bird enclosure (indicated with arrow) within the footprint of the proposed excavation works.

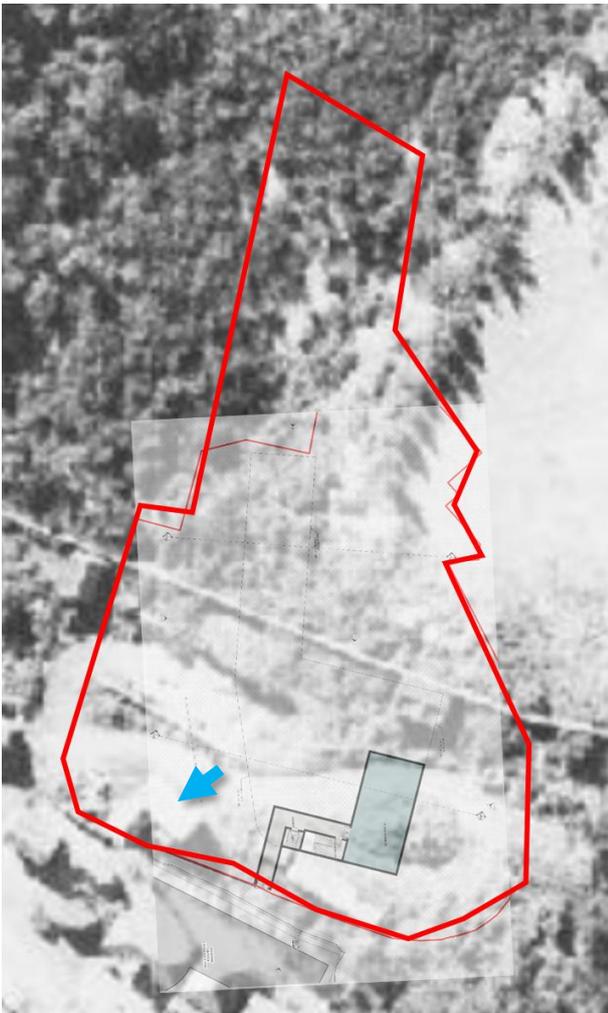


Figure 36 – Overlay of first floor plan on 1961 aerial photograph. Note the former incinerator (indicated with arrow) located to the west of the proposed excavation works.

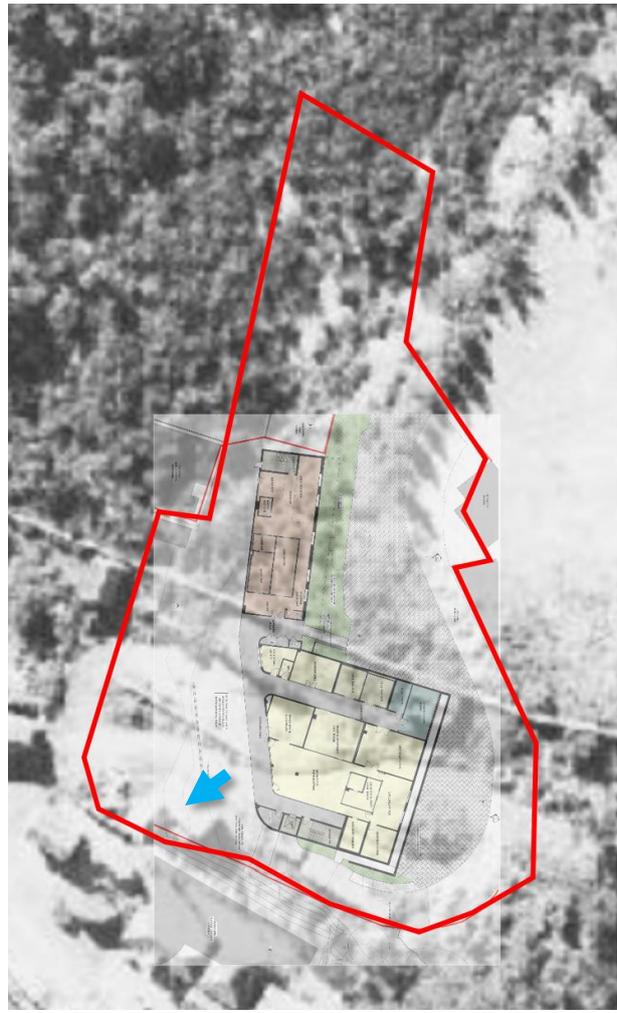


Figure 37 – Overlay of second floor plan on 1961 aerial photograph. Note the former incinerator (indicated with arrow) located to the west of the proposed excavation works.

9. CONCLUSION AND RECOMMENDATIONS

9.1. ARCHAEOLOGICAL POTENTIAL

This HAIA has determined that the subject area has:

- low potential to contain archaeological resources associated with the early European development of the subject area and Mosman more generally (1788-1911);
- low potential to contain archaeological resources associated with the establishment of Taronga Zoo under the Directorship of La Souef (1912-1940);
- moderate potential for archaeological resources which evidence adaptations to the Zoo under Hallstrom's Directorship (1941-1966); and
- high potential to contain archaeological resources which evidence adaptations to the Zoo under Strahan's Directorship (1967-1986).

9.2. ARCHAEOLOGICAL SIGNIFICANCE

Although it is considered unlikely that historical archaeological features associated with early land grants would survive within the subject area, these may have significance at a State level for their ability to reflect and provide information about the earliest European settlement of the Mosman area which cannot be garnered from available historical sources.

Historical archaeological resources associated with the former bird enclosure and incinerator may have local significance for their association with adaptations to the Zoo under Hallstrom's Directorship (1941-1966).

Evidence of the former bird enclosure may have local significance for its ability to demonstrate the historical development of Taronga Zoo and evolving attitudes toward zoological practices. Evidence of the former incinerator may likewise have local significance for its ability to reflect the earliest phase of zoological veterinary activities within the Zoo site.

9.3. IMPACT ASSESSMENT

This HAIA has established that there is nil potential for these potential archaeological features associated with the mid-20th century incinerator to be impacted by the proposed development.

There is low-moderate potential for the proposal to impact evidence of the former bird enclosure within the south-eastern portion of the site. In the unlikely event that high integrity, legible remains of this feature are exposed, these may meet the threshold for local significance.

9.4. RECOMMENDATIONS

Based on the above conclusions, Urbis provides the following recommendations:

Recommendation 1 - Monitoring

For proposed surface disturbance within the south-eastern portion of the subject area and within the vicinity of the former bird enclosure (see Figure 34 & Figure 35), close monitoring should be undertaken by a suitably qualified archaeologist. In general, archaeological monitoring should adhere to the following:

- Demolition should be undertaken in such a way as to minimise impacts to foundations and subsurface structures. The archaeologist should initially be consulted about the proposed demolition methodology.
- An archaeologist should be present at all times during the lifting of current hard surfaces, excavation and/or other activities that result in ground disturbance.
- Where a mechanical excavator is used, it must have a flat or mud bucket, rather than a toothed bucket, to ensure a level ground surface.
- All machinery should work backwards from a slab surface in order to avoid damage to any exposed archaeological relics.

- Fills should be removed sequentially in reverse order of deposition, starting with any imported fill and overburden, which reflect the archaeological stratigraphy and as instructed by the archaeologist.
- If archaeological relics are identified by the monitoring archaeologist, work must stop immediately. Further assessment and recording of the find will be required.

Recommendation 2 – Chance Finds Procedure

For proposed surface disturbance, including excavation for the TWH Nutrition Centre first-floor and second-floor and landscaping works throughout the remainder of the subject area, the following Chance Finds Procedure should be implemented:

1. All works must stop in the immediate vicinity of the find. The find must remain undisturbed and temporary fencing established around the find.
2. The Site Supervisor, or another nominated site representative must contact an appropriately qualified archaeologist.
3. The archaeologist should examine the find, provide a preliminary assessment of significance based on the findings of this HAA, record the item and decide on an appropriate management strategy.
4. Depending on the significance of the find, re-assessment of the archaeological potential of the area may be required, and further archaeological investigation required.
5. Works in the vicinity of the find can only recommence upon on the written advice of the nominated Excavation Director.

Recommendation 3 – Archaeological Induction

Prior to the commencement of works, an archaeological induction should be delivered by Urbis to all relevant construction personnel for the purpose of establishing:

- heritage obligations of all project personnel;
- how to identify archaeological relics of State or local significance;
- what to do in the event that potential relics are uncovered; and
- how the Unexpected Finds Procedure works in practice.

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