THE ZOOLOGICAL PARKS BOARD OF NSW

TARONGA ZOO

BULL ELEPHANT FACILITY
PADDOCK & BARN

STATEMENT OF ENVIRONMENTAL EFFECTS
PLANNING NSW (APRIL 2007)

MAJOR PROJECT APPLICATION

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1 INTRODUCTION

The newly completed elephant exhibit located in the "Wild Asia" Precinct at Taronga Zoo was designed for the occupancy of four female Asian elephants (Elephas maximus), which will form the nucleus of Taronga Zoos new breeding herd of Asian Elephants. After the commencement of construction in February 2003 and the Zoological Parks Boards (ZPB) commitment to a regional breeding program, an additional male "Bull" elephant was acquired by the ZPB to complete the breeding group.

The young bull elephant (Gung) and 4 female elephants arrived at Taronga Zoo in November 2006.This "Bull" elephant (Gung) is currently only a juvenile (6 years old) and is still part of the herd of elephants that are currently housed in the Wild Asia Elephant Exhibit.

As part of the ZPB's commitment to the findings and conditions of the Administrative Appeals Tribunal (AAT) decision handed down on 6 February 2006, the ZPB is required to construct a new "Bull" holding facility for the juvenile bull (Gung). This facility will be designed to hold the bull elephant currently being imported to Taronga Zoo and any subsequent bulls that will be bred as part of the regional breeding program being undertaken by Taronga Zoo. When juvenile bull elephants reach maturity (approximately 8-10 years of age) they are required to be separated from the females and are only brought together for breeding purposes, which is what occurs with Asian elephants in the wild. As part of the AAT conditions, the ZPB is committed to building the "bull" holding facility, ready for occupation and operation by the end of 2008 which is the subject of this application.

The new bull facility will comply with all current ARAZPA (Australasian Regional Association of Zoological Parks and Aquaria) guidelines for elephant management in Australasian Zoos.

The "Bull" elephant facility has an estimated construction budget of $5.0 million. Documentation is programmed for completion by mid 2007 and construction is scheduled to be completed by late 2008.

2 LIST OF DEFINITIONS

AAT	Administrative Appeals Tribunal
ARAZPA	Australasian Regional Association of Zoological Parks and Aquaria
DA	Development Application
DPI.	Department of Primary Industries
EAP Act	Exhibited Animal Protection Act 1986
EP&A 1979	Environmental Planning and Assessment Act 1979
ERD	Elephant Restraint Device
ESD	Environmentally Sensitive Design
FMCS	Facilities Monitoring Control System
HIS	Heritage Impact Statement.
JTCW	Jackson Teece Architecture
MLEP	Mosman Local Environment Plan
MPI	Master Plan Implementation Strategy (Taronga Zoo)
PA	Public address
SEPP 56	State Environmental Planning Policy No 56 - Sydney Harbour Foreshores and Tributaries
SREP 23	Sydney Regional Environmental Plan No 23 1990 - Sydney and Middle Harbours
UDAS	Urban Design Advisory Service. (Urban Design Principles and Visual Analysis document, May 2001)
VENM	Virgin excavated natural material
ZPB	The Zoological Parks Board of NSW

3 EXISTING SITE CHARACTER & UTILITIES

3.1 THE SITE

Taronga Zoo is located on the northern foreshore of Sydney Harbour on Athol Bay within the electorate of Mosman. Taronga Zoo is Crown land managed by the Zoological Parks Board of New South Wales. (Refer to FIG 1)

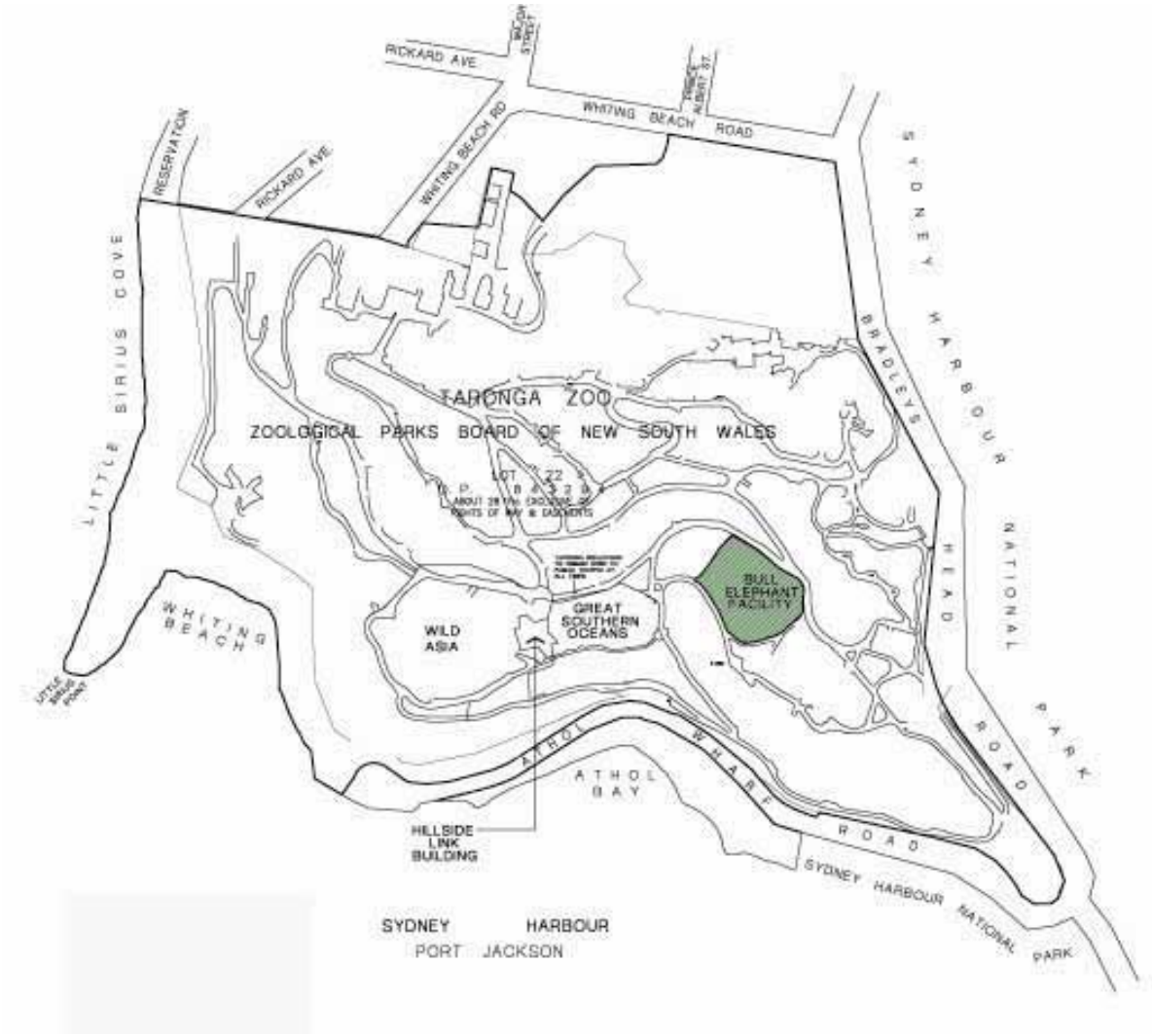

FIG 1 Site Location

Address: Bradley's Head Road Mosman NSW 2088

Nearest Intersection: Whiting Beach Road

Boundaries: The boundaries of the Zoo are irregular and are generally formed by Whiting Beach Road, Rickard Avenue & Steps, Bradley's Head Road, Athol Wharf Road and the harbour foreshore to mean high water mark around Athol bay, Whiting beach and Little Sirius Cove.

The site of the proposed “bull” elephant facility is located centrally in the eastern half of the Zoo, approximately halfway between the top and lower entrance. The site is on Taronga Boulevard, the Zoo’s main vehicle and pedestrian circulation spine. Taronga boulevard will provide service access to the site as well as serve as the main visitor viewing area.

The proposed facility is on the former 1916 Elephant exhibit site, which includes the Heritage listed Elephant Temple. Asian Elephants were housed on this site up to 2005 until they were re-located to Western Plains Zoo. The Elephant Temple was previously the exhibit and night house for Taronga Zoo’s Asian elephants, however current ARAZPA guidelines and OH & S requirements now prohibit the use of this building as an animal exhibit and holding facility.

The heritage listed elephant temple is proposed to be refurbished into a public interpretation centre, the first stage of which was completed in July 2006. The site is otherwise currently vacant.

Photograph of existing elephant temple and old elephant exhibit at Taronga Zoo. November 2005

The following photographs are typical images of the existing site character in and around the site.

3.2 TOPOGRAPHY

Taronga Zoo is located at the head of Athol Bay on the northern shore of Sydney Harbour and is comprised of steeply sloping land that predominantly faces south. Although generally southerly in aspect, the site comprises three small ridges, which offer variations in aspect, microclimate and views. Ridges run north-east and fan out from the Zoo's upper car park. Most of the natural landforms within the Zoo have been extensively modified since the Zoo's inception on this site in 1916. Many areas have been levelled and filled.

The Taronga site is typical of Hawkesbury sandstone foreshores with natural soils comprised of poor sandy loams deficient in phosphorous and organic matter.

The site of the proposed "Bull" elephant facility is almost level. The open area of the former Elephant exhibit was constructed with a circle of pre-cast concrete retaining walls around the southern and western sides, behind which backfilling provided a flat yard for the elephants. The northern and eastern sides are relatively level with the adjacent ground, which adjoins Taronga Boulevard. Within the yard, there are concrete wallows and containment moats, the remainder being earth or grassed.

3.3 ADJACENT FACILITIES

The site is located centrally within the zoo. There are no physical boundaries or visual connections to adjoining property owners. The site is bounded by Taronga Boulevard to the north, the concert lawns to the south, the Tree Tops Café to the east and the Crocodile and Gibbon exhibits to the west. (Refer to SITE PLAN / SURVEY in Appendix 2).

3.4 LANDSCAPE SETTING AND CHARACTER OF THE SITE

The landscape character of the site can be described as an open clearing bounded by dense mature tree plantings. Within the confines of the site itself there is very limited vegetation due to the area being occupied by elephants for almost 90 years. The confines of the existing site can be described as gently sloping turf mounds inter-dispersed with remnant push poles and animal husbandry structures such as moats, bathing pools and containment fences.

Within the old elephant exhibit there is one mature palm tree (*Livistona australis*, cabbage tree palm) located in the centre of the western portion of the Yard. This palm is proposed to be transplanted off site during the construction works and then reinstated adjacent to the temple with new mature palm trees. Located in the north western corner of the exhibit is a mature fig tree which is proposed to be removed. This fig tree has been damaged by elephants and is proposed to be replaced with new fig trees with measures installed to protect them from elephant damage. The new fig trees proposed are for screening and animal shade amenity purposes.

The landscape character of all the site boundaries with the exception of the eastern boundary can be described as densely vegetated landscape curtilages that provide screening of the site both internally and externally.

The western perimeter boundary is heavily planted with mature trees, including she oaks, Australian cedar trees and a large fig tree), all these trees are proposed to be retained for screening and amenity purposes. The ground level from which these grow is at the rear of the Gibbons Exhibit, some 5 metres below the existing elephant yard in one of the remnant drainage lines that run parallel to the central north

– south ridge line that divides the topography of the zoo. Refer to DA.07 PROPOSED AND EXISTING TREES in Appendix 2 for trees to be removed.

New plantings recently put in place around the refurbished heritage temple are designed to compliment the colour scheme of the temple as well as maximising the viewing of the structure itself. Traditionally the gardens that surround the temple have been planted with ornamental plants reflecting the general landscape cultural trends of the time.

3.5 HERITAGE AND ARCHAEOLOGICAL SIGNIFICANCE

The Indian Elephant Temple is of Exceptional heritage value. It is an iconic landmark both within and from outside of the Zoo. This significance of the Temple is recognised through its inclusion on the ZPB Section 170 Heritage Register, where it is identified as item 21B. The Temple Yard, in its modified configuration, is recognised as having High significance and recorded as item 23L.

The Elephant Temple and Yard, built at the time of the Zoo's opening in 1916, has remained largely as originally built until 1986, when the Zoo's emphasis shifted towards the breeding and conservation of elephants. At this time, modifications were made to the Temple and Yard, with a substantial tripling of the paddock area, requiring the remodelling of the original Yard and incorporation of adjoining open space to the west of the exhibit.

The design of elephant houses evolved to reflect these changes, as the principles of conservation and zoology have developed. As part of the implementation of the "Zoo 2000" view to the future Master Plan, a new Asian Rainforest Precinct was opened in late 2005, featuring state-of-the-art facilities for housing and breeding Asian elephants. This facility is located approximately 300 metres away, along Taronga Boulevard, the main vehicular and pedestrian thoroughfare through the Zoo.

While it is most desirable that historic items continue to be utilised for the purposes they were designed for, it is recognised that the current ARAZPA elephant management guidelines and OH& S requirements prevent the ongoing use of the Indian Elephant Temple and Yard as an enclosure suitable for exhibiting elephants. The proposal significantly retains the subject area's continuous association with the display of elephants since the Zoo's opening in 1916.

The adaptive reuse of the Indian Elephant Temple as a public interpretation centre will have minimal physical impact on the fabric and provide the public with a unique opportunity to compare the development of zoological design since Taronga's opening. To some extent it continues its historic function.

3.6 EXISTING AND PROPOSED SERVICES

All required services for the proposed development are available at the site. A number of the services that have not been upgraded as part of the Great Southern Oceans and Wild Asia precinct upgrades will be replaced as part of this development.

Stormwater

The existing Stormwater drainage lines have been identified as being undersized and in a dilapidated condition. New pipe work, ranging from 300-450ø, will run around the top end of the site, along Taronga

Boulevard and part of the western service road, installed as part of the Wild Asia and Great Southern Oceans Precincts construction. These new facilities will be utilised by the new barn and exhibit drainage system for surface runoff and pool drainage. All stormwater collected from the site is directed to Taronga Zoos Waste Water Treatment Plant where it is treated and recycled for use in the Zoo.

Domestic and Recycled Water supply

The site is currently traversed by the lower of two independent ring mains supplying the Zoo's domestic and fire hydrant water. A new Fire Hydrant ring main independent of the domestic potable water ring main has recently been installed in the adjacent Taronga Boulevard as part of the Wild Asia exhibit works. The proposed bull elephant facility will be utilising both these services.
The new bull elephant barn and exhibit will also utilise the existing re-cycled water line which is located in Taronga Boulevard. Recycled water is proposed to be used for animal waste wash down, cleaning and irrigation purpose.

Sewerage

The site is currently traversed by a 225mm and 300mm Sydney Water main, which traverses the site north-south. This is in fair condition and will be retained. Waste water from the new barn facility will utilise this main.
Sewerage will be generated from the staff facilities in the elephant barn and from hose-outs in each of the holding pens.

Gas supply

As part of the new "Wild Asia" infrastructure services upgrade a new natural gas line has been installed under Taronga Boulevard adjacent to the site. The supply lines to the Zoo from AGL are currently 210 kPA regulated at the meter. The new line installed from Back yard to Bush to Tree Tops café is a 160mm diameter polyethylene line which changes down to a 110mm diameter polyethylene line from Tree Tops café to the Gorilla exhibit.

It is proposed under the bull elephant facility to connect into this gas line so that gas hot water heaters and other utilities can be used for warm water wash down and heating.

Electrical

High Voltage distribution network for the site

The Zoo site is currently supplied with electricity by 5 substations on an 11kV ring main. Substation 3 is at the western side of the site, below the precinct and substation 4 is at the eastern side of the Great Southern Oceans site. A new transformer kiosk substation with a capacity of 1,000kW has been recently installed at the lower end of the Hillside Link building. The new facility will be utilising power from the Zoos lower HV ring main.

The existing high voltage infrastructure is considered adequate for the requirements of the proposed bull elephant facility.

Low Voltage distribution network for the site

The main low voltage switchboard for the new barn and exhibit will be designed to be fed via underground low voltage sub main cables. These sub mains are generally located within conduits and have moulded case circuit breaker protection. Local electrical distribution boards MSBs / EDBs will be designed and located in the newly constructed barn. The existing EDBs located in the old elephant

temple will also be utilised for the new facility.

The following features will be designed into the low voltage distribution network to match all other newly constructed exhibits and buildings across the zoo.

- Earthing systems for all new switchboards and distribution boards in the new facility will be designed to have a M.E.N. link to minimise the likely over voltages due to lightening strikes.
- All final sub circuits for power, night zoo lighting and lighting sub circuits where cable runs underground have been designed with a RCD protection and 30mA trip.
- All switchboards will be designed with surge protection.
- All lighting sub circuits for night zoo lighting shall be controlled via the C-bus control system. Each main switchboard (MSB) and distribution switchboard (EDB) is to include a C-bus control section.
- Surge arrestors shall be installed in each board. Category C protection to MSB-061 and category B protection to distribution boards to ANS1/1EEE C62.41-1991.
- All metering shall be capable of remote electronic monitoring by the FMCS.

Proposed new cabling, conduits and trenches will be specified for all components the designed / specified low voltage distribution network to be installed through out the new facility. All existing redundant cabling and conduits noted to be demolished will be removed once the new system is commissioned.

Outdoor Lighting

All outdoor lighting shall comply with, where relevant, AS/NZ1 158.3: 1999

Data & Communications

The proposed bull elephant facility will utilise a new fibre optic cable that has been designed and installed in the new building distributor IDF (BD F6) located in the Hillside Link Building. This cable runs under Taronga Boulevard to the existing junction pit located at the Urban House at Backyard to Bush (B2B) from where it is proposed the new bull elephant facility can branch in. From this junction pit the fibre optic cable can then be connected through to the IDF board in the shearing shed which is then connected through to the Zoos main server located in the Zoos Administration building. Once the cable is connected to the junction pit at the Urban House in B2B the data / communications systems designed in the new Bull Elephant facility can be commissioned.

The new Bull elephant facility will be designed with multiple data points in keeper areas that can be utilised for data and communications as well as CCTV surveillance of the facility and elephants.

Emergency Power

The new bull elephant facility will be designed with emergency back up power via a connection to an external MSB proposed to be located adjacent to the new holding barn. In the event of a site wide power failure and access to a functioning MSB in this location, the Zoos emergency power generator can be connected into this MSB to energise the gate motors and gate control panel for the elephant pens so

that the elephant facility can maintain normal operations. Back up generator power at this location will also power all electrical services run from this MSB.

The following facilities in the new facility will also have local battery and uninterruptible power supply (UPS).

- Hot wire energisers. (8 hour smart battery pack back up)
- Two way radio system
- All data / Communications / computer hubs through the Zoos PABX and main computer server
- Site wide Public address system (PA)

Note: All hot wire energisers for the external exhibit in the new facility will have a battery back up pack (UPS) with 8 hour capacity.

Facilities Monitoring and Control system (FMCS)

As part of the new bull elephant facility design and MPI recommendations it is proposed to implement a number of services and facilities with FMCS capability.

In general the overall systems design for the new facility will be designed with the capability of implementing FMCS in the future. This system will assist in maintaining the assets in the new bull elephant facility and designated systems beyond the site. The system would ultimately provide a safer more efficient working environment for Taronga Zoo staff and its animal collection and would support the Zoos commitment to ESD.

The main function of a future FMCS would be to monitor the following functions and services in the new facility and also on a broader site wide context.

- Irrigation controllers (landscape) Status / fault monitoring and programming
- Recycled water treatment plant. (Status monitoring / metering).
- Soundscape. (Interpretation). (Status monitoring and programming)
- PA (Site wide). (Fault monitoring)
- Night Zoo lighting. (Status / fault monitoring and programming)
- Hot wire systems. (Fault and alarm monitoring)
- Gate and motors controls. (Pumps, elephants gates etc with status and fault monitoring capability)
- High voltage network ring. (Fault monitoring)
- Low voltage distribution network. (Fault and alarm monitoring)
- Data and communications. (Fault monitoring)
- Electronic security systems. (Fault and alarm monitoring)
- Fire protection systems. (Fault and alarm monitoring)

For the above mentioned systems the FMCS would be able to perform the following functions from either an authorised persons lap top computer or designated computer work station.

- Monitor plant alarms or faults
- Monitor plan operational conditions
- Monitor plan efficiencies and usage
- Monitor system status
- Control system set points
- Control systems functions
- Control system operational schedules.

The FMCS should provide a logical and easy to use interface to facilities operations by integrating functionality to monitor information and provide systems control. The system should have a user friendly graphical interface capable of providing all required information.

The FMCS would utilise the existing site wide IT network and is recommended to be a Direct Digital Control system (DDC) which is suitable for operation on an Ethernet based IT data network and is not vendor specific. The system should have the facility for remote alarm notification off site for designated maintenance staff.

3.7 WASTE MANAGEMENT

All proposed stormwater lines within the proposed building and exhibit will be designed to the 1 in 20 year ARI as stated in Australian Rainfall and Runoff (1997). The design of the stormwater system will ensure that the existing system usage is maximised. All new pits will be to AS 3500, and existing pits which do not comply with current standards will be upgraded to meet AS 3500.

All stormwater from roadways and pathways will be directed to the Zoo water treatment plant for recycling.
Where possible, all re-usable / non contaminated spoil from required excavation will be retained on site. It will be crushed and used for general landscaping and filling.

Water for the various ponds and moats is recycled water taken from the Zoo's water treatment plant. The water is filtered, and if necessary, treated with ozone to remove organic wastes. Excess water (backwash from the filters) is returned to the recycling plant for further cleanup.

All stormwater is piped to the water treatment plant and is recycled for various uses around the Zoo. Water from animal holding washouts also goes to the water treatment plant for recycling.

3.8 VISITOR CIRCULATION AND EXHIBIT ACCESS

Visitor circulation

Visitors currently pass by and view the exhibit from Taronga Boulevard and the forecourt to Tree Tops Café. Taronga Boulevard is the main pedestrian and vehicular circulation route running across the Zoo, as well as being the service access route for the site. Visitor circulation is confined to the northern and eastern perimeters of the site along Taronga Boulevard

There is a five-metre level change around the western and southern sides of the site, which prohibits any public access in those directions.

All public access and circulation in and around the proposed facility, including the existing heritage Temple, will meet the requirements of the Australian Standard AS 1428 “Design for Access and Mobility”. Pathways around the exhibit will be ramped, if necessary, with no steps.

Exhibit Access for Service and Delivery

The main service and staff access to the exhibit is through the barn for day to day operations. A set of double gates located next to the old elephant temple are designed to allow large vehicle access to the paddock for animal transactions or major maintenance works.

Internal Zoo deliveries to the rear of the proposed new barn are required for the removal of animal waste and to deliver animal food. Deliveries are generally required to be made before public entry time of 9.00 am, however some deliveries may be required in normal Zoo working hours. Trucks may deliver straight into exhibit or the rear of the barn. The Zoo uses a combination of small delivery vehicles and fixed-axle table-top trucks, max 7 metres long.

Garbage collection, using a fixed-axle compacting truck, occurs three times daily.

Emergency Access Requirements

Emergency vehicles will use Taronga Boulevard. Fire trucks will have clear access to fire hydrants, with the minimum clearance of 4-5 metres allowed for emergency fire truck and ambulance access along Taronga Boulevard. Fire hydrants are located on Taronga Boulevard adjacent to the proposed new bull elephant barn facility.

3.9 ADJOINING FACILITIES AND OPERATIONS

The Precinct is currently adjoined by:

- the Gibbon and crocodile exhibits to the west, at the lower level; Located in the remnant drainage line that runs parallel to the central north – south ridge
- natural bushland and a picnic area / concert lawns to the south, at the lower level;
- Wollomi exhibit and picnic lawns to the north, across Taronga Boulevard at located at a higher level and are not able to be directly viewed from the roadway;
- Tree Tops Café (Food Outlet) and forecourt adjoining the eastern boundary, at the same level as the Temple Yard;

4 DESCRIPTION OF THE PROPOSAL

The proposed bull elephant holding facilities will be an integral part of Taronga Zoo's Regional Asian Elephant breeding program and are required as part of the AAT decision handed down in February 2006 to complement the newly constructed elephant breeding facilities located in the "Wild Asia" precinct. The facility comprises a Barn (night house) and adjacent external paddock and exercise yard.

4.1 SCOPE OF THE PROJECT

The barn to house the following:

- 3 holding pens
- An Elephant Restraint Device (ERD)
- Raceways
- Keeper safe corridors
- Office
- Food preparation / Food store / Equipment storage

The paddock (2000m² minimum) to accommodate:

- A pool
- A wallow
- Exhibit enrichment devices
- Containment fences
- Landscaping and shade structures

The yard (500m² minimum) to accommodate:

- A pool
- A wallow
- Exhibit enrichment devices
- Containment fences
- Landscaping and shade

4.2 BUILT FORM

The proposed new holding barn is a single storey building located along the western perimeter of the site, adjacent to the Gibbon and Crocodile exhibits. (Refer to FIG 2). The new barn is proposed to be constructed of facetted pre-cast concrete slab walls that are designed with planting pockets to evoke a stylized landform set in the landscape. The pre-cast concrete slabs will be angled and coated with an applied finish that is coloured to assist the building to blend into the landscape. Differing colour shades and textured finishes on the buildings external surface will be designed to simulate silhouettes of a forest understorey and the shadows of the proposed mature palm trees that will be planted along the eastern side of the elephant exhibit. The angled concrete slabs that form the buildings walls will be designed with ventilation penetrations so that natural airflow through the building can be controlled. These penetrations will be able to be opened and closed so that staff can regulate the temperature of the building for animal welfare and husbandry purposes.

FIG 2 Proposed Site Plan (Refer also Drawing DA.03 Site Plan in Appendix 2)

The buildings roof will be a profiled sheet metal with ventilated skylights for natural light and will be ringed by the wall parapets. (Refer FIG. 3)

FIG 3 Building Massing Model

The following table outlines the various factors affecting the built form of the barn, presented in the format of a response to each design issue.

Issue	Design response
Relationship to the Heritage Temple	The new barn is designed as a background building. The aim is to: – Blend the new building into the existing landscape backdrop which is to be retained on the western edge of the site. – To have the existing Elephant Temple visually dominate the site and not compete with the new barn. – Minimize visual impact of the new barn both from views within the Zoo and from the harbour by using finishes and colours that compliment the adjoining and proposed natural vegetation. – Use super advanced planting to create immediate amenity for elephants and provide screening to the new structure when viewed internally. – The new barn is to have a robust contemporary form contrasting with the imitation temple form of the old barn,
Views from the Harbour	– To minimise the visual impact of the new building from the harbour by making the structure a background built form using angular forms and contrasting façade panels to break up the built form and silhouettes. – Maintain and preserve the existing landscape curtilage around the boundary of the exhibit. – Use super advanced trees and palms to provide immediate amenity for animals and to assist the building blend into the existing landscape setting.
Limited site area	– The ARAZPA guidelines for the management of elephants in Australasian Zoos stipulate that Asian elephants must have access to 2500m2 of external exhibit space. – To minimise impacts on adjoining exhibits and comply with ARAZPA guidelines the size of the barn facility including holding pens, ERD and keeper service areas are at their minimum size requirements.
Building Height keep to minimum	– Minimum 8m internal height required for bull elephant
Impact on adjacent Exhibits	– Minor impacts on adjoining Gibbon and Crocodile exhibits during construction.
Materials	Both sides of the majority of the barn walls are required to be elephant proof. The most appropriate material being concrete. The external finish of the concrete panels will be treated with an applied finish, the colours of which will be selected to blend in and compliment the existing natural and proposed vegetation.
Heritage Items	Refer to section 2.2.7 Heritage and Archaeological Significance

The proposal involves the following key components:

- Retention of the area's continuous association with the display of elephants since the Zoo's opening in 1916;
- Retention and adaptive reuse of the Indian Elephant Temple, an item of Exceptional significance, for use as a public Heritage interpretation centre;
- Modifications to the Yard, including the already modified original Yard and 1987 enlarged yard area;
- Introduction of a new male (bull) elephant holding facility to the west of the precinct;
- Development in the vicinity of the Elephant Temple (Item 21B) Original Bird Aviaries (Item 19B), Gibbon Exhibit (Item 118B) and original pathway layout (Item 99L);
- Existing mature trees and landscaping maintained as part of the backdrop to this exhibit; Ground disturbance relating to the construction of the Barn and modifications to the Paddock levels which

has the potential to disturb relics associated with Historical Archaeological Features Original Ladies Lavatory 1916 (AF12), original Perimeter Visitor pathway around Elephant Yard (AF32) and former kiosk (AF6); and

- Modifications to existing views and vistas within and from the Zoo.

While it is most desirable that historic items continue to be utilised for the purposes they were designed for, it is recognised that the current ARAZPA elephant management guidelines and OH& S requirements prevent the ongoing use of the Indian Elephant Temple and Yard as an enclosure suitable for exhibiting elephants.

The proposal significantly retains the subject area's continuous association with the display of elephants since the Zoo's opening in 1916.

The adaptive reuse of the Indian Elephant Temple as a public interpretation centre will have minimal physical impact on the fabric and provide the public with a unique opportunity to compare the development of zoological design since Taronga's opening.

The project’s order of capital cost is estimated at $5 million.

4.3 BUILT ELEMENTS

The New Barn

Refer to the attached drawings for details of the building. The position of the barn has been carefully considered to maintain and maximise views and curtilage to the temple. Locating the barn outside but adjacent to the existing paddock was no possible, having detrimental impacts on adjacent vegetation, exhibits and zoo circulation and not being practical for elephant access. Locating the new barn elsewhere with in the existing paddock would impinge on views of the temple from the harbour.

All of the external walls of the barn will be pre-cast concrete, with a cast-in texture suggesting tree forms, and of a colour to be selected to blend in and compliment the natural vegetation.
Final design details of the proposed external materials and finishes, including schedules and a sample board of materials and colours, shall be submitted prior to the commencement of any works.
Flooring varies between rubberised floors for elephant pens to concrete on grade.

Fences and Barriers

Refer to drawing DA-03 for general location of primary fences and barriers between animal exhibits and the general public. The design intent is to conceal all animal containment barriers wherever possible by integrating them into the landscape elements. These barriers are typically made of steel bollards with steel cable strung in between. The bollards are painted black so as to visually disappear in the landscape. “Hot wires” or electrically charged horizontal wires will be used in some sections of the fence to keep elephants away from vegetation and the public.

Animal Exhibit

Refer to drawing DA-03 for general arrangement of the proposed exhibit.
The exhibit area is essentially the original Temple Yard space that has been marginally increased to the comply with the ARAZPA guidelines for the management of Asian elephants in Australasian Zoos which stipulate that Asian elephants must have access to outdoor yards that total a minimum 2500m2.

The new yard will be spilt into two different holdings yards that are 2000m2 and 500m2 for animal management and husbandry requirements. Both yards will contain a self filling water body, earth mounds and a mud bath for the animal’s behavioural enrichments and amenity purposes. Mechanical gates will control access between the yards and the holding barn. It is a requirement of the ARAZPA guidelines that the elephants have access to both the yard and building during the night.

A safety setback zone of 4m is required where ever the outdoor exhibit runs adjacent to public areas. $m is considered to be the reach of an adult male elephant including the reach of a visitor.

The grading of the exhibit will be designed so as to allow for the public viewing of elephants as well as to provide privacy zones for the animals so that they can move out of public view at any time if desired.
For landscape elements proposed for the new exhibit facility refer to the landscape section below.

Urban Design Elements

The proposed facility is essentially an animal breeding holding and display facility with limited urban design elements. All public buildings and structures have been themed to provide an appropriate backdrop for the exhibits. Building materials, building style, signage and outdoor furniture will be carefully selected and designed to suit the precinct.

Signage

Minor interpretive signage will be displayed in public areas and will be themed appropriately. The major interpretive theming and signage displays will be located in the refurbished heritage temple which is not part of this submission.

Landscape

The proposal intends to maintain the existing landscape curtilage that bounds the site setting in its entirety, with the exception of selective pruning to existing trees along the western perimeter boundary of the site to accommodate the new barn. (Refer to plan DA-07 for the list of proposed trees to be removed)

The existing elephant paddock and public domain located around the exhibit will be substantially enhanced through the planting of super advanced trees and palms. Super advanced plantings are required to give the animals immediate shade amenity as well as providing the public with an immersive shaded environment in which to view the animals.

The elephant paddocks will be also fully remediated with new grading and topping of turf, complimented with elephant enrichment devices such as bathing pools, mud wallows and earth mounds. All existing identified heritage fabric such as the moats and associated concrete structures will be archivally recorded before being buried and preserved under approximately 1metre of new VENM material that will form the sub-base to the new elephant paddock.
The building itself is designed to blend into the landscape setting. Creepers will be planted and encouraged to grow over the building. This form of landscape treatment along with the articulated surfaces and finishes to the external concrete walls will assist the building to blend into the landscape setting when viewed both internally and from the harbour.

4.4 VISUAL QUALITY

The site is currently vacant, but essentially remains as it was when last in use as an elephant exhibit. The main visual element, the Elephant Temple, is considered to be visually significant both from within the site itself and from beyond the boundaries of the Zoo. The secondary visual element, the Temple Yard and its bounding pre-cast concrete retaining walls, is of minor visual significance, other than as a backdrop to the concert lawns to the south and adjoining animal exhibits.

All of the existing yard elements which are dilapidated and of little visual significance will be demolished or buried as part of the new development. All identified heritage structures such as the original moat structure will be archivally recorded and protected by geo-fabric before being buried under 900mm of clean VENM fill.

The landscape visual quality of the Temple Yard itself currently lacks points of particular visual significance with the exception of the mature *Livistona Australia* (Cabbage tree palm). This palm will be transplanted and reinstated adjacent to the temple after the construction works have been completed. Additional mature plants will be planted to compliment this palm and provide visual screening to the new elephant barn and shade amenity for the animals. Mature fig trees will also be planted in the new elephant exhibit to provide screening to the new barn and provide immediate shade amenity to the animals.

The dense vegetation along the western and southern edges of the site provides an important landscape curtilage that is critical for screening and providing vital shade amenity for both visitors and the animals. The importance of this landscape curtilage is recognised by the new development which proposes to

retain all the significant trees along the western and southern boundaries. Minor pruning of some of the large trees along the western boundary of the site will be required to accommodate the new barn; however these trees will be adequately protected for the duration of the construction works

The five metre level change along the southern and western perimeter of the site and dense vegetation curtilage means that the site is not able to be viewed from the southern or western aspects. The view from Taronga Boulevard across the Temple Yard is to the tops of trees growing at the lower level and to glimpses of the Harbour beyond. This view will be maintained and not impacted by the new development.

4.5 PLANT EQUIPMENT AND FACILITIES

Water used in the wading pools will be taken from, and pumped back to, the Zoo's central recycling plant. A pump is proposed to be located in the service area of the old elephant temple.

Any plant for other systems and facilities will be located beneath the barn's floor, accessible from adjacent the gibbons/crocodile exhibit below. It is proposed that plant and associated facilities will not be visible from any public areas.

Heating in the Elephant Barn will be via gas fed heaters located on the barn ceiling. Gas hot water heaters will also be used for warm water wash down of the elephants and in the staff amenities.

All pen / exhibit gates in the facility will be able to be operated both manually and mechanically for remote operation scenarios. Gates will either be electric or hydraulically driven. An overhead gantry crane has also been designed into the concept for both keeper and animal husbandry operational requirements.

The Elephant keeper facilities are located within Barn and comprise a kitchenette (Food prep), food store, toilet, shower and equipment area. A service yard at the rear of the facility is designed for storage and vehicle access to the barn. A keeper safety zone is adjacent to all the holding pens in the barn which allows keepers to safely reach an animal non contact area quickly in the event of an emergency.

4.6 ESD INITIATIVES AND DESIGN INTENT FOR THE BUILT FORM, EXHIBITS AND SERVICES WITHIN THE NEW BULL ELEPHANT FACILITY.

The new Bull Elephant Facility is proposed to be constructed to meet Taronga Zoos commitment to environmentally sustainable development through the design of the barn, outdoor exhibit and associated services. All operational facilities within the new facility will be designed with ESD principles in mind. Construction materials have been chosen to promote sustainability – selection of timber is based on current standards. No rain forest timbers are used, materials with high intrinsic energy costs such as aluminium, and PVC, vinyls and other plastics, are avoided where possible.

Built form

The proposed new bull elephant holding barn has been purposefully designed to meet the following ESD principles.

- The bull elephant holding buildings orientation on the site has been designed to minimise visual impact of the structure when viewed from both within the Zoo and from the Harbour. The new barn has also been designed so as not to visually dominate the landscape setting over the existing heritage temple.

- The bull elephant holding building is designed to maximise external shading and minimise extreme temperatures for both the amenity of the staff and animals.
- The bull elephant holding building is proposed to be designed with natural lighting (Skylights) combined with efficient artificial lighting to provide a safe and comfortable work place environment that is also energy efficient.
- The bull elephant holding building is proposed to be designed with natural ventilation (open louvres) located in penetrations in the concrete walls to provide a comfortable work place environment for both staff and animals that is also energy efficient.
- Recycled building materials will be used where ever practically possible.
- Recycled water will be used for toilets and internal animal holding area wash down / cleaning.
- The implementation of FMCS capability in the new building and operational systems through out the AER will provide a means to closely monitor and reduce energy consumption on a precinct wide basis.

Exhibits

The proposed external holding paddocks and associated animal facilities will be purposefully designed to meet the following ESD principles.

- The external exhibit will use recycled landscape materials where ever possible, including soil mixes, substrates and mulches.
- The external exhibit will use recycled water for irrigation and animal exhibit area wash down. All irrigation is automated to maximise efficient bed coverage and to reduce exposure to high evaporation times during the day.
- All tree plantings across the proposed site have designed for the provision of shade for visitors, staff and to provide animal amenity.
- The use of recycled rubber in the soft floor surfaces required for the Elephant pens / exercise yards .

Services

Mechanical services.

All mechanical services proposed to be used in the new bull elephants holding facility will be designed to provide flexibility of choice by users for the comfort conditions required. General ESD principles of the mechanical services design will include.

- Economy cycle and winter warm up energy saving functions.
- Optimum start program to reduce morning cooling down and warming up period

The ZPB's "Conditions of Entry and Working on Site" sets out environmental controls for the building contractor, including:

- Waste Reduction And Purchasing Policy (WRAPP) reporting – contractors are required to document certain materials used on site and waste materials disposed of or recycled. Completed forms are to be submitted every two months;
- limits on the usage/wastage of water;

- control of sediments.

All water used in water bodies and wash down of animals and their holds is taken from the Zoo's water recycling plant.

4.7 CONSTRUCTION STRATEGY AND TIMING

The work will most likely be staged, with work beginning at the north of the site and moving southward for completion.

Construction is likely to be phased as follows:

1. Demolition and site preparation.
2. Bulk excavation and land contouring.
3. Excavation and laying of infrastructure services
4. Overall building and exhibit set out.
5. Construction of building and exhibit elements
6. Construction of main landscape elements.
7. Completion of detail landscape elements, including advanced tree planting.
8. Completion of theming and educational elements.
9. Final commissioning of all services
10. Project completion.

Areas around the site will be maintained and managed for continued public access to neighbouring exhibits, including the Back-yard to Bush precinct, the concert lawns, Wollemi and vehicular / pedestrian access along Taronga Boulevard.

It is proposed that the contractor's site work sheds are to be located on the site of the existing Great Southern Oceans contractor site sheds at the south eastern corner of the Zoo.

The demolition and building contracts will stipulate conditions for carrying out the works which comply with the Zoos environmental protections. These include:

- construction will be limited to normal construction work hours. This will be from 7.30am to 4.00pm Mondays to Fridays and 8.00am to 1.00pm Saturdays, with no work allowed on Sundays or public holidays;
- construction vehicles over 3 tonnes will be restricted to use of major roads only, not Prince Albert Street;
- noise minimisation and suppression techniques will be employed on all construction equipment;
- erosion and sediment control measures to be installed and maintained around the site during construction;
- Stormwater run-off from the subject site, as a result of the proposed development will not to exceed the existing level of run off from the site.
- measures for protection of trees will be implemented;
- control of vehicular movement within the Zoo;
- various signage to warn or protect visitors;
- erection of hoardings to protect the public;

- compliance with the BCA;
- protection of heritage items.

Noise from operation of the Precinct will not increase current levels.

The ZPBS's Conditions of Entry and Working on Site imposes strict conditions for control of noise, including:

- fitting of silencers to noise absorption to plant and construction equipment;
- carrying out of work with minimum disturbance to visitors, staff and animals;
- excessive noise activities to be identified in construction program;
- principal may require periodic shutdown of equipment found to interfere with Zoo activities.
- implementing site controls for the restricted movements of trucks and controlling hours of operations for deliveries which are nominated in contract conditions.

4.8 ANIMAL DISPLACEMENT

No animals will be displaced for this work. The site is currently vacant and the animal proposed for it will reside with the female herd at Wild Asia until the end of 2008 when this animal must be separated from the herd and move into the new facility.

4.9 CONSULTATION

Planning NSW Pre-submission meeting

Prior to the submission to the Minister seeking approval to proceed on the preparation of a project application for a "Bull" Elephant Holding facility at Taronga Zoo a pre-submission meeting was held at Planning NSW offices on the 15/9/2006.

The following plans were presented at the meeting and copies left with Planning NSW for their information and comment.

1. Concept Design Sketch Massing Model. (A3 Colour)
2. Updated montage View towards Hallstrom Square Pines. (A3 Colour).
3. Site layout plan. SK-N1-C. February 2006 (A3 Colour)
4. View from the Harbour 1, 2 and 3. (A3 Colour copies of each view)
5. Elevations and Sections (A3 black and white copies)

Attendees at the meeting were as follows:

Izlem Boylu	(Sydney Metropolitan Team leader from Planning NSW)
Duncan Mitchell	(Zoological Parks Board Project Manager)
Trevor Williams	(Project architect, Jackson Teece)

Duncan Mitchell presented the back ground to the project and why it was necessary for the Zoological Parks Board of NSW to build a new bull elephant facility.

Trevor Williams presented the concept drawings, harbour view montages and discussed the general design principles of the proposed built form which was to design a building that blended into the natural landscape setting of the Zoo when viewed internally as well as from the harbour. The functional and animal management requirements of the buildings design were also discussed as were space requirements of the new exhibit and the necessity to comply with the current ARAZPA guidelines for the management of Asian elephants in Australasian Zoos.

Izlem Boylu presented the process and stages that the project application would have to take to gain approval from Planning NSW. This process was described as follows:
1. Submission to the Minister (Major Project requirement) 10 days to process
2. Preliminary Assessment document. (28 days to process)
3. Statement of Environmental Effects Document for public exhibition. (30 days to process)

A letter and submission to the Minister was prepared by the ZPB and submitted to Planning NSW on the 29th of September 2006 seeking approval to proceed with the preparation of a project application for a Bull Holding facility at Taronga Zoo.
Confirmation from Planning NSW that the Director General, as a delegate of the Minister, formed the opinion on the 5th of October 2006 that the proposal is a project and that Part 3A of the Act applies. Consequently the ZPB may now apply for the approval of the Minister to carry out this project. In seeking the Ministers approval, section 75E of the Act requires the ZPB to lodge an application for the project with the Director General which is the purpose of this submission.

Mosman Council

Prior to the submission of this Preliminary Assessment document for the Major Projects Application to the Minister a pre-submission meeting was held at Mosman Council offices on the 30/10/2006 to brief Council on the proposal.

The following plans were presented at the meeting.

1. Concept Design Sketch Massing Model. (A3 Colour)

2. Updated montage View towards Hallstrom Square Pines. (A3 Colour).

3. Site layout plan. SK-N1-C. February 2006 (A3 Colour)

4. View from the Harbour 1, 2 and 3. (A3 Colour copies of each view)

Attendees at the meeting were as follows:

Joe Vertel	(Mosman Council Strategic Planner)
Duncan Mitchell	(Zoological Parks Board Project Manager)
Jannene Smith	(Taronga Zoo Heritage Officer)

Duncan Mitchell presented the back ground to the project and why it was necessary for the Zoological Parks Board of NSW to build a new bull elephant facility. The functional and animal management requirements of the buildings design were also discussed as was the necessity to comply with the current ARAZPA guidelines for the management of Asian elephants in Australasian Zoos.

Jannene Smith presented the issues regarding the items of heritage significance on the site, such as the Indian Temple and items of archaeological significance. Jannene Smith also discussed some of the internal views that would be impacted as a result of the proposed development.

Joe Vertel was generally positive about the proposal from a heritage and design perspective. Joe made a comment about the proposed holding buildings mass and whether it could achieve the visual anonymity that was shown in the photomontages. Joe was assured that the objective of the buildings design and finishes was to make the built form blend into the landscape as much as physically possible. The animal husbandry and ARAZPA guideline requirements that dictate the buildings design was explained to Joe and it was discussed that these design requirements are the minimum that the ZPB can meet in terms of complying with the ARAZPA guidelines for managing elephants in Australasian Zoos.

NSW Heritage Office

A meeting was held on the 18/10/2006 at Taronga Zoo to introduce the proposal to the NSW Heritage Office.

The following plans were presented at the meeting and a copy supplied to the Heritage Officer for their information.

1. Concept Design Sketch Massing Model. (A3 Colour)

2. Updated montage View towards Hallstrom Square Pines. (A3 Colour).

3. Site Plan. 2005197 DA03. 01 February 2006 (A3 Colour)

4. View from the Harbour 1, 2, 3 and 4. (A3 Colour copies of each view)

5. Montage view from Top of Old Seal Theatre (A3 Colour)

6. Barn Plan & Roof Plan 2005197 DA-04 01 February 2006 (A3 reduction and A1 black and white copies)

Attendees at the meeting were as follows:

Brad Vale	(NSW Heritage Office, Heritage Officer)
Duncan Mitchell	(Zoological Parks Board Project Manager)
Jannene Smith	(Zoological Parks Board, Heritage Specialist)
Ian Brodie	(Jackson Teece, Project Architect)

Duncan Mitchell presented the back ground to the project and why it was necessary for the Zoological Parks Board of NSW to build a new bull elephant facility.

Ian Brodie presented the concept drawings, harbour view montages and discussed the general design principles of the proposed built form which was to design a building that blended into the natural landscape setting of the Zoo when viewed internally as well as from the harbour. This principle enables the retention of the visual prominence of the original Elephant Temple as a landmark in its setting. The functional and animal management requirements of the buildings design were also discussed as were space requirements of the new exhibit and the necessity to comply with the current ARAZPA guidelines for the management of Asian elephants in Australasian Zoos.

Jannene Smith presented the background to the heritage planning for the project and discussed the project's compliance with the Zoo's Heritage Office endorsed conservation principles for development in the vicinity of heritage items. The potential disturbance of archaeological features was discussed and it was concluded that an Excavation Permit be sought following development approval for the project and prior to disturbance of the ground. The proposal for the adaptive reuse of the Temple as an Interpretive Centre was also introduced.

Brad Vale was taken on a tour to the project site and key views and potential impacts arising from the development discussed. The recent refurbishment works, including new colour scheme, for the temple were also shown. Other Section 170 heritage items in the vicinity of the prosed development were also viewed on the site tour.

The Heritage Office has since informed Jannene Smith, that, as the proposal is a Part 3A project, they would review the application if it is referred to the Heritage Office against the existing CMP and AZP and the future heritage impact statement.

5 STATUTORY CONTROLS

5.1 GENERALLY

Taronga Zoo is a 28 Hectare site and is designated Crown Land which falls under the jurisdiction of the planning instruments listed in the sub-sections below.

The site particulars are:

Lot Number:	22
Deposited Plan No.1 :	DP 843294
Zoning:	5a (Special Uses). The proposed use complies
Address:	Bradley's Head Road, Mosman NSW 2088

The boundaries are defined on the Certificate of Title Folio Identifier 22/843294 at Mosman in the LGA of Mosman. Generally the boundaries are Whiting Beach Road, Bradley's Head Road, Whiting Bay and Sirius Cove.

Subject Site: Contained within the boundaries of Taronga Zoo. (Refer to the Context Plan.)

Relevant Planning Controls:

- This project is subject to the provisions of State Planning Policy (Major Projects) 2005, part 3A of the Environmental Planning & Assessment Act 1979. Within part 3A of the act, Schedule 2 nominates – specified sites (clause 6) which lists Taronga Zoo as a specified site. (No 11) - Criteria under which the provisions of this major project are assessed are of State or regional environmental planning significance (75B(2) (a)). In addition to these criteria the estimated capital investment value of the project is more than $5million.
- Regulatory Control State Environmental Planning Policy No 56 - Sydney Harbour Foreshores and Tributaries
- Sydney Regional Environmental Plan No 23 1990 - Sydney and Middle Harbours
- Mosman Local Environment Plan 1998
- Environmental Planning and Assessment Act 1979 Section 79C
- NSW Heritage Act 1977
- Building Code of Australia (BCA)

FSR	N/A
Setbacks	N/A
Building Height	N/A
Private Open Space	N/A
Parking and vehicular access	N/A
Waste Disposal	N/A
Sewer	Designed in accordance with Sydney Water regulations
Stormwater	Collected stormwater is recycled through the Zoo's Water Treatment Plant
BCA	All aspects of the building work will be designed to comply.

EAPA	Designed to comply with the provisions of the EAPA administered by NSW DPI.
Other	Taronga Zoo Master Plan Urban Design Principles and Visual Analysis May 2001, prepared by the Urban Design Advisory Service.

5.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT

The matters for consideration in determining this Application are subject to the provisions of State Planning Policy (Major Projects) 2005, part 3A of the Environmental Planning & Assessment Act 1979. Within part 3A of the act, Schedule 2 nominates – specified sites (clause 6) which lists Taronga Zoo as a specified site. (No 11) - Criteria under which the provisions of this major project are assessed are of State or regional environmental planning significance (75B(2) (a)). In addition to these criteria the estimated capital investment value of the project is more than $5million.

5.3 STATE ENVIRONMENTAL PLANNING POLICY 56

The site is listed within part 3A of the act, Schedule 2 nominates – specified sites (clause 6) which lists Taronga Zoo as a specified site. (No 11).

Items a), b), b1), c), e), h), m) and o) Regarding public access to and ownership of the foreshore

Public ownership of the land within the foreshore area and access to the foreshore will not be affected by the proposal. The relationship between harbour and foreshore is not affected.

d) Conservation of significant bushland and other natural features

Significant trees are retained as shown on the site plan. Refer to photomontages attached for a more detailed description.

f) Protection of significant natural and cultural heritage values

Refer To Section 3.5 – “Heritage and Archaeological Significance” for a description of the heritage items on the site. The proposal preserves these items.

The cultural heritage protected by the re-introduction of elephants to the site.

In conjunction with the Elephant enclosure in the Wild Asia exhibit, this contemporary elephant exhibit provides for a “hands on” animal husbandry approach in contrast with the earlier “hands off” approach. The redundant existing heritage elephant temple will be retained and used as a Zoo museum and interpretive centre.

g) Protection and improvement of unique visual qualities of the Harbour

The design of the proposal seeks to minimise the bulk of the new building within the limitations of functional/safety requirements. The building has been styled to minimise any visual impact when viewed from the harbour and when viewed internally.

Materials and finishes of the building were chosen to be as non-intrusive as possible. The walls of profiled pre-cast concrete will be a dark colour and will be screened by planting where possible. The roof is flat, with planters around the perimeter, with plants encouraged to grow down over the walls.

i) The conservation of items of heritage significance

Refer To Section 3.5 – “Heritage and Archaeological Significance”.

j) Scale and character of the site

The proposal maintains the existing scale of the previous, now-defunct, Elephant exhibit. The Yard is marginally increased in size to meet ARAZPA guidelines for the management of elephants in Australasian Zoos. The new barn has also been designed to meet these standards (minimum requirements) and is of a scale that is considered to be visually sympathetic to the heritage Elephant Temple building as well as when viewed from the harbour.

As an animal "hold", the new building is designed to be as concealed as possible, complying with the UDAS Taronga Zoo Master Plan – Urban Design principles and visual analysis, May 2001.

k) Character of development when viewed from the water

The site for is on a flat area, formed by extending the original exhibit yard with tall concrete retaining walls around the lower sides. There is a dense tree canopy around the southern and western sides obscuring views of the site from the Harbour.

The proposed elephant barn sits to the western side of the site amongst a canopy of existing mature trees that are proposed to be retained for screening purposes.

l) The application of ecologically sustainable principles (ESD)

The Zoo considers itself an educator in areas of sustainability for flora and fauna and seeks to incorporate environmentally sustainable principles into its built projects (Refer to section 4.6 of this submission). Impact on natural systems, topography and vegetation is to be minimised. The design avoids use of building materials with high intrinsic energy costs, such as aluminium and, where possible, PVC, vinyls and other plastics.

Refer to Section 4.6 of this submission.

n) The feasibility and compatibility of different land uses

The proposed land use maintains the current role for the Zoo as a place for exhibiting elephants, and seeks to preserve a balance between the natural bushland setting, a contemporary zoo design, and that of visitor-focussed zoo services and activities.

5.4 SYDNEY REGIONAL ENVIRONMENTAL PLAN 23 - SYDNEY AND MIDDLE HARBOURS AND DEVELOPMENT CONTROL PLAN (SREP 23)

The site is located within W1 General Waterways Zone and the proposal is permissible with consent from the consent authority, being the Minister.

This proposal is "land based development" for the purposes of SREP 23 and complies with the aims, objectives, special provisions and heritage provisions of the plan.

The relevant considerations set out in SREP 23, with which this proposal complies, are as follows:

- The proposal maintains and enhances the important natural and visual attributes of the harbour.
- The proposal is an appropriate and compatible adaptation of the existing site character, which is a Zoo.

Other relevant matters under Clause 8.

a. The proposal will not change the appearance of the site from the waterway and the foreshores. The proposal will enhance the natural character of the Zoo site through the retention of significant trees and through proposed planting works.

b. The proposal will not cause pollution or siltation through the use of erosion and sedimentation control measures used during construction.

c. The proposal will not have adverse effect on wetlands or flora or fauna habitats.

d. The proposal will not give rise to any significant noise impact in the surrounding locality or adjoining waterway. The building contract sets restrictions on the allowable noise produced by any construction machinery or plant.

e. The proposal will not change drainage patterns or cause shoreline erosion.

f. The proposal will not alter patterns of use of the waterway.

g. The proposal will not alter demand for storage space for boats.

All items of heritage significance will be retained in this proposal.

5.5 NSW HERITAGE ACT 1977

State Heritage Register

Taronga Zoo is not presently listed on the State Heritage Register, however as the site clearly meets the relevant criteria the site is to be nominated following completion of the current Masterplan projects. The Heritage Office endorsed a Conservation Strategy, 2002, which provides an integrated, multi-disciplinary framework for the management of the heritage resources at Taronga.

Similarly an Archaeological Management Plan was endorsed by the NSW Heritage Office in January 2004 as a document to provide management principles and implementation strategies for the site's Aboriginal and historical archaeological resources. Together with the accompanying Heritage Impact Assessment, 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 development in the vicinity of a number of Section 170 heritage items; however it does not involve the removal of any item from the register; transfer of ownership; or the demolition of any identified heritage item, requiring notice to be given to the heritage Council of NSW.

Archaeological Relics

The Heritage Act 1977 affords statutory protection to 'relics' that from 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.

There are two known potential historical archaeological features within the subject area, the 1916 Ladies Lavatory (AF 12) and original perimeter visitor pathway around the elephant yard (AF32). The site is also adjacent to a former Kiosk 1943 (AF6).

In accordance with the management processes in the endorsed Archaeological Management Plan an application for an Excavation Permit will be made to the NSW Heritage Office prior to disturbance of the ground.

5.6 MOSMAN LOCAL ENVIRONMENTAL PLAN

Development consent is not required by Mosman Council, unless the works affect certain individual heritage items listed in Schedule 2 of the MLEP. This project is subject to the provisions of State Planning Policy (Major Projects) 2005, part 3A of the Environmental Planning & Assessment Act 1979. Within part 3A of the act, Schedule 2 nominates – specified sites (clause 6) which lists Taronga Zoo as a specified site. (No 11) - The estimated capital investment value of the project is more than $5million None of those listed items is included in this precinct or in any way affected by this proposal.

In general, the proposal meets each of the stated objectives of the plan in terms of:

- providing business which encourages local employment opportunities;
- encouraging recreational opportunities for residents of Mosman;
- improving the services on community lands;
- enhancing and protecting the scenic foreshore amenity;
- minimising pollution of all types;
- management of waste materials in accordance with ESD principles.

6 ASSESSMENT OF IMPACT

6.1 PARKING AND TRAFFIC

Local parking and traffic conditions will not be affected by this proposal. During construction, truck movements will be restricted to use of major roads only, and during normal construction hours only, to minimise impact on neighbours, consistent with industry practice. (Refer to Section 4.7 Construction Strategy and Timing).

All Zoo related circulation is maintained within the site and has no impact on surrounding residences or land uses.

Foreshore access to the public is not affected by the proposal.

6.2 ACOUSTIC ENVIRONMENT

The physical location of the site in the centre of the Zoo and nature of the proposed animal activity will confine all operational noise to within the boundaries of the Zoo. This proposal will not have any impact on local environment acoustics outside the confines of the Zoos boundary. Elephant occupation and associated operational noise have been carried out on this site for almost 90 years.

The acoustic environment within the locality will remain unchanged. Precautions will be taken to minimise noise during construction (refer to Section 4.7).

6.3 VISUAL IMPACT STUDY

Views to the Zoo:

The lower eastern portion of the north-south ridge (East Gully and corniche) has been identified as an important north to south view corridor with high visual exposure as viewed from the Harbour. It has been identified that significant views of the harbour are obtained above the upper seal pools and from near the floral clock. (UDAS Taronga Zoo Master Plan – Urban Design principles and visual analysis, May 2001).

Relevant Built Form Guidelines

- Retaining the central line of the gully as a wide and well defined view corridor. Built form is discouraged within the line of the corridor so that continuous north south views can be achieved.

- Ensure that the gully retains its role in providing key open spaces and natural amphitheatres with views through to the harbour beyond.

Figure 2.5.6 from the UDAS Master Plan is reproduced below, with the outline of the Bull Elephant Facility superimposed.

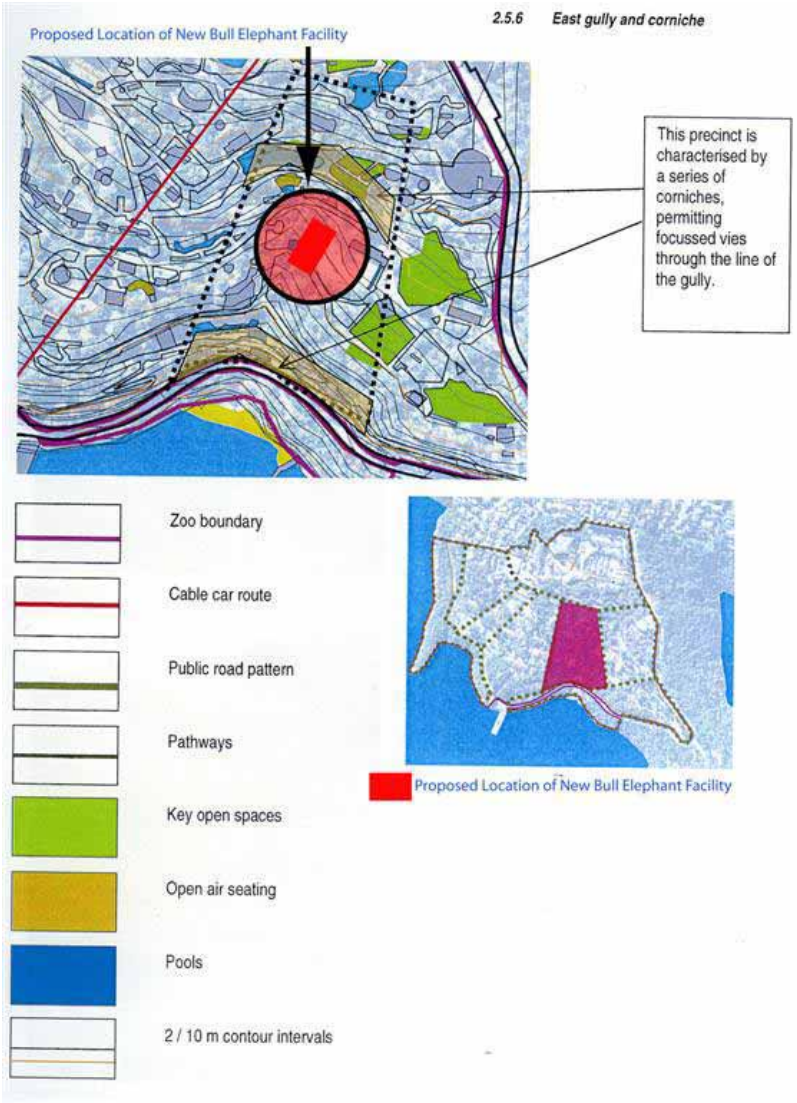

FIG 4 View Corridors (Figure 2.5.6 from the UDAS Master Plan)

The area identified on Figure 2.5.6 shows that the proposed development falls outside of the visually sensitive zones located to the north and south of the precinct. In addition to this the existing gully vegetation to the west, south and north of the exhibit provides a dense landscape curtilage that screens the building. The Elephant barn is the only significant structure to be built in the proposal. By virtue of its necessary size, the structure will have some impact on the on the existing landscape character of the Zoo when viewed internally, however the use of materials and colours will mitigate any visual impact when viewed from the harbour.

Proposed new super advanced palms and fig trees will supplement the existing trees to be retained on site and will substantially add to the dense screening of the building. These trees will not only provide screening but are also required to provide animal and visitor shade amenity.

In addition to the new and existing plantings it is proposed to utilise climbers that will grow over the building and soften the edges of the built form. Further softening of the built form will be achieved

through the selection of colours and finishes designed to assist the barn blend into the natural landscape setting.

The visual impact when viewed from the Harbour will be minimal. Refer to photomontages attached.

There will be no reflective material on the buildings or in the yards. All surfaces will be natural in colour in dark tones.

Views A1, A2, B1 and B2

The photomontage views from the Harbour illustrate the existing and proposed impact of development. Only the southern elevation of the new building will be visible when viewed from the Harbour. When viewed from both the Harbour or from vantage points within the Zoo, the proposed landscaping on and around the building will provide a visual and physical link to adjoining precincts.

Views within the Zoo:

Views within the Zoo will only minimally be affected by the development. The steep topography allows views from areas in the northern section of the Zoo to remain over the precinct.

View 1. Tree Tops Café to Hallstrom Square Pines

There is currently a view from Tree Tops Café to the Hallstrom Square Hoop Pines that will be impacted by the new barn development. Only the very tops of the pines will be able to be viewed over the roof of the new barn.

Refer to photomontage No 1 Refer Appendix 4

View 2 Top Seal Pools public Amphitheatre to Harbour

The view from the Top Seal Pools through gully to the Harbour will not be impacted by the proposed new development. Existing trees and palms are retained to screen the proposed building and maintain the densely vegetated character of the east gully.

Refer to photomontage No 2 Refer Appendix 4

View 3 Existing Heritage Temple

The elephant temple is recognised as being one of the most visually significant buildings in the Zoo and the proposed bull elephant facility development intends to preserve this status. The design intent of the proposed barn building and surrounding exhibit elements is to maintain the visual dominance of the architecture of the existing elephant temple in the landscape.

Through ground modelling, finishes and the extensive use of landscape the proposed building is designed to blend into the densely vegetated back drop of the east gully that runs around the western perimeter of the site.

Any views from public viewing areas to the existing heritage elephant temple will not be impacted by the proposed new development.

Refer to photomontage No 3 Refer Appendix 4

Views from the Zoo:

The new barn development is not located in any of the visually sensitive zones outlined on Figure 2.5.6 taken from the UDAS Master Plan (Urban Design Principles and Visual Analysis document, May 2001).

The existing flat paddock area of the elephant exhibit falls in between these zones ensuring that the proposed design heights and mass of the building remains below existing view lines.

There are no public viewing opportunities to the harbour from vantage points in this exhibit, due to the existing Elephant Temple and animal access areas only (Exhibit area) which will remain in place.

6.4 HERITAGE IMPACT

As discussed in Section 3.5, the proposal reinstates the site's continuous association with the display of elephants since the Zoo's opening in 1916.

While it is most desirable that historic items continue to be utilised for the purposes they were designed for, it is recognised that the current ARAZPA elephant management guidelines and OH& S requirements prevent the ongoing use of the Indian Elephant Temple and Yard as an enclosure suitable for exhibiting elephants.

The adaptive reuse of the Indian Elephant Temple as a public interpretation centre will have minimal physical impact on the fabric of the heritage item and will provide the public with a unique opportunity to compare the development of zoological design since Taronga's opening. To some extent it also continues its historic function.

The potential impacts have been mitigated by the incorporation of the following design actions:

- The use of colour and vegetation to reduce visual impact on internal views and views of the site from the harbour;
- Location of the built form away from the Temple in order to retain the visual dominance of the Temple building in key views from Taronga Boulevard;
- Retention of mature landscape elements.
- Management of the potential archaeological resources within the subject site, in accordance with the conditions of an Excavation Permit (subject to NSW Heritage Council approval), of the ground disturbance.

6.5 OTHER IMPACTS

The site is centrally located within the boundaries of the Zoo and is more than 300 metres from the nearest residential boundary.

Neither the proposed building nor the Yard will be seen by neighbouring residences and there will be no overlooking of neighbouring residences from them. Therefore, there will be no loss of privacy or increased overshadowing onto any other property. There will be no increased overshadowing of other areas within the Zoo from the precinct.

The Sydney Harbour National Park on Bradley's Head is the only other neighbouring land that will have views to the Precinct. These views are over Athol Bay. There will be no visual impact from these vantage points.

7 CONCLUSION

The proposed new Bull Elephant Facility is an appropriate adaptation of use for the site considering the site's continuous association with the exhibition of elephants since the Zoo's opening in 1916.

The proposed new Bull Elephant Facility development has taken into account the site, character and surrounding Zoo environment. The project is a sympathetic response which reflects the Zoo's responsibilities to maintain its natural environment for visitors in the Zoo as well as for the public viewing of the Zoo site from the foreshores and harbour. The siting, scale, mass and quality of all elements within the proposed development have been a considered response to the Zoo's natural and cultural setting and are consistent with the vision and principles proposed in the UDAS Taronga Zoo Master Plan – Urban Design principles and visual analysis document of May 2001.

The new barn has been located to within the space available to best protect the unique visual qualities of the harbour and respect the adjacent heritage buildings.

The new barn projects a high standard of design and architecture worthy of the adjacent heritage building and harbour setting.

The proposal promotes orderly and ecological sustainable use and development of the site and maintains its continuous association with elephants.

The planting strategy and overall scale and quality of the development will ensure that all built forms are successfully integrated into the existing densely landscaped environment as well as complimenting the architecture of existing elephant temple.

The proposal ensures that the Zoo is on track to meet its commitment to the findings and conditions of the Administrative Appeals Tribunal (AAT) decision handed down on 6 February 2006, which required the ZPB to construct a new "Bull" holding facility for the juvenile bull (Gung). The ZPB is committed to building the "bull" holding facility, ready for occupation and operation by the end of 2008 which is the subject of this application. The new bull facility is designed to comply with all current ARAZPA (Australasian Regional Association of Zoological Parks and Aquaria) guidelines for elephant management in Australasian Zoos and meets the requirements of modern animal husbandry practices. The proposal will ultimately provide greatly enhanced behavioural enrichment opportunities for the animals to be exhibited, as well as providing a unique experience for visitors to Taronga Zoo.

The proposal meets the objectives of the relevant planning and statutory controls that govern development on the Taronga Zoo site will comply with the ZPBs (DPI) Legislative requirements under the EAPA (act) administered by the NSW Department of Primary Industries.