



ZOO

Internationally visits to ZOO ranks among the most popular of leisure pursuits (IMG 033). People find wild animals fascinating and have the need to be in contact with the wild. Unknown worlds and diverse forms of life are revealed. The exhibiting of wild life is an age old act of man through which humans place themselves in relation to the world.

ZOO is a symbol of the evolution of the intent of humans towards nature taking into account exploitation, control, curiosity, domination and examination. This takes place in a landscape of enclosure, in cages or artificially copied habitats, representations to provide escapism. ZOO is where Animal and Man meets; it is a space that is constantly renewed, projecting the attitude and view of the society, a space where Animal and Man can be observed.

Does ZOO have a spirit? Or should it perhaps be viewed as the graveyard of various decontextualised *genius loci* or spirits of place? ZOO is a

The ZOO situation challenges the 'truth' behind man's perceptions of reality, between science and narrative, the real and the spectacle. ZOO is the habitual situation of Anima and Technic. Artificiality, that constitutes reality.

microcosm of the world; a habitual gathering, the collection of man and animal from a global spectrum (IMG 036); the mythical tempus of Paradise, of primordial plenitude (Eliade, 1974: 73).

The situation of ZOO dates back to antiquity when animals were kept for hunting and food on the grounds of the wealthy. The act of ZOO was turned into a spectacle. The development of ZOO can be linked to colonization and ethnocentrism. An evolution started from the 16th and 17th Centuries when the exploration of Asia and the Americas became a curiosity. Animals were brought to Europe in great numbers. Development of a single enclosed place of exhibition came about in this time (Baratay & Hardouin-Fugier, 1998).

Walking through ZOO, much can be perceived about the society that developed it, and the way they enclose themselves and the animals they surround.

HYPOTHESIS

Place has returned to the vastness of space (an evolving 'programmed' electrosphere and digital landscape). The weaving of the virtual into the real has created a situation similar to the design process that architecture has known from the beginning of time. This is however not the problem; the problem is the intervening of political and economical agendas. A building should primarily be a stage from which its potential function is outlined, irrespective of stylistic trends. Architecture should function as a filter between past and future; buildings should be degradable. Architecture must take on new meaning beyond the provision of matter and physical needs to embrace the ultimate in human expression - that of the spiritual potential of life, embracing the ancient human process of 'making', of giving birth to order and meaning, to spaces that all living species inhabit. No structure should ever be complete; it should function in a world - ever changing - as an ever changing organism, bound only in process.

Porter (2004: 124-125) defines *sacred space* as spaces that convey intense meaning, communicated through collective memory to an individual or a group, in whom it evokes an emotional response. Such places further embrace an extended cosmological and physical context, intuitively, balancing feeling with necessity. 'In the beginning' objects gave immediate expression to their inner nature, which, uncontaminated, was in unison with the fundamental laws of all creation (Rykwert, 1972: 16). Structure should become a multi-layered lesson in its own right, communicating with its users, rich in texture and symbolism, a microcosm of the traditional environment on all levels and on all scales. Every whole should be a part and every part a whole.

Architecture should fascinate and inspire - like the first dances around fire. Here architecture appears - if only for a moment and from a particular point of view - as the free space in which we can be

(represent ourselves). For conceptual architecture to penetrate the everyday it has to become tangible. It has to become a lived experience.

Play should provide escapism for the child from a boring static environment, and for the animal from his inauthentic habitat - reintroducing ritual and event as programme for human beings and behaviour and 'freedom' for animals, thus reintroducing the real nature to virtually induced children and introducing the virtual to animals who stand muted and stationary by the real. No being can ever truly become a spectator.

If architecture were to be renewed, if its true function were again to be understood after years of neglect, a return to the dawn of consciousness could reveal those primary ideas from which a true understanding of architectural forms would spring (Rykwert, 1972: 28). The child is the eternal return to the dawn of man into consciousness that he shares only with himself, only with mankind. Nothing can endure if it is not animated through a sacrifice (Eliade, 1974: 20). Man sacrifices himself to be given a new beginning on creation, permanence and longevity of body and object steel the renewal of paradise and the natural seductive play that comes with it's renewal.

Architecture should appear to be natural - in a sense unfinished (growing and changing), more like a fragment or ruin than a complete creation (building). This unfinished nature is intentional, and expresses the possibility of completion (infinitely impossible) or engagement. The power of nature creates no final product; neither should the power of architecture do so. Aristotle declares that the poet must be a 'maker' not of verses but of stories [*mythos*], since he is a poet in virtue of his 'representation' [mimesis], and what he represents [imitates] is action [*praxis*] (Vesely, 2004: 368). A primitive hut situated permanently perhaps beyond the reach of the historian or archaeologist, in some

place must be called Paradise. And Paradise is a promise as well as a collective intuitive memory.

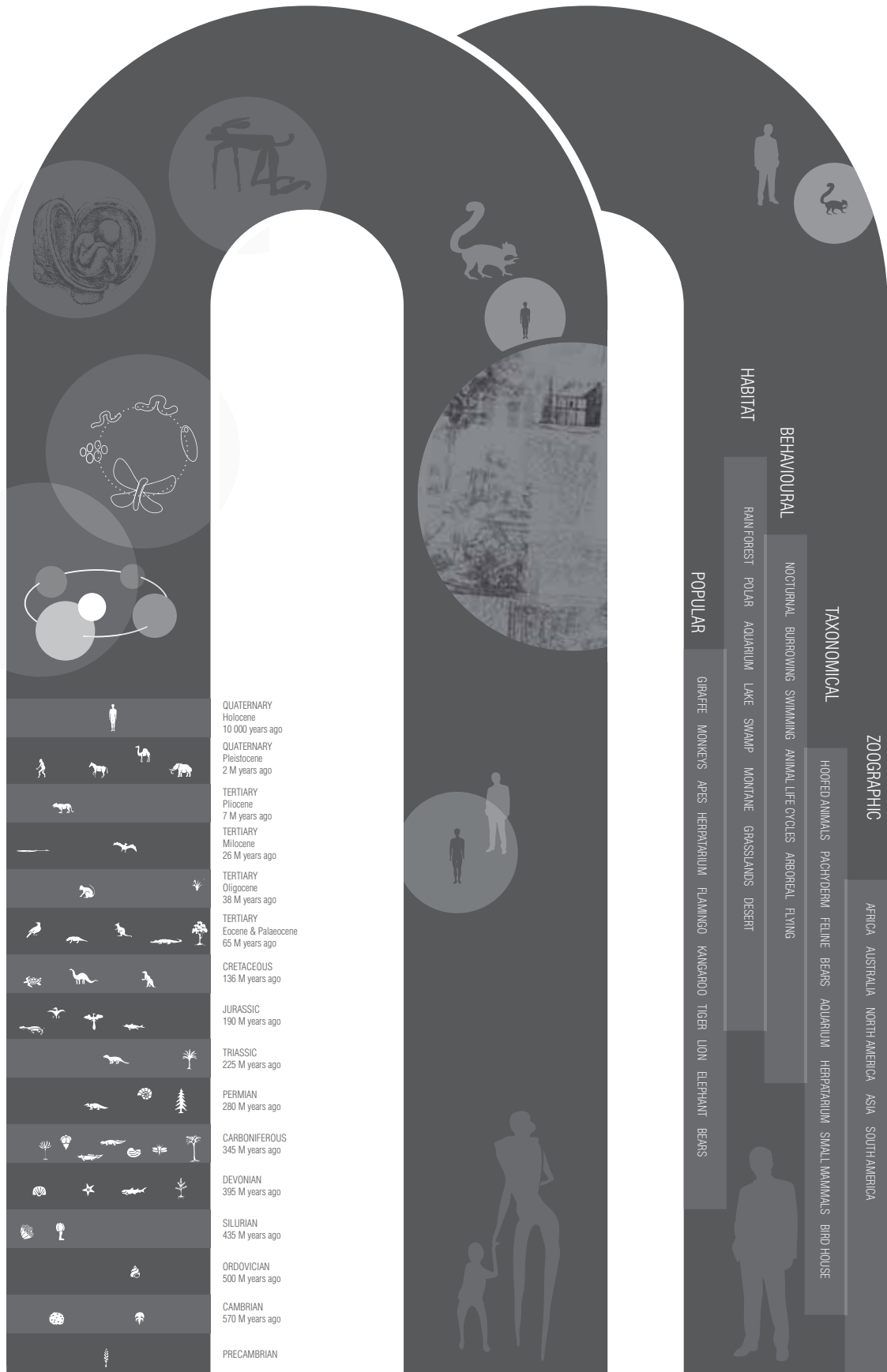
The escapism of paradise is bathed in natural light infiltrating structure, animating, breathing life into objects in moving shadow and colour, and awakening the movement and sound within animals; it provides a medium by which we can better see the link between the visual and vast spatial acoustic articulation of ZOO. Architecture must be a knot at the centre of the world around which we gather to tell the stories that weave our society together. ZOO becomes an integral instrument in communicating the real and virtual in our world.

NZG should take advantage of being various centres, and various levels of enclosure throughout these transparent layered centurms; flow and attraction of animal, man and nature, and all scientific knowledge on them - invisible or transparent; weaving as pathways, journeys, and information waves. Weaving into a thickening of the invisible world; the building as ornamentation of the tangible and intangible, poetically mimicking this flow in order to grasp the surrounding, the whole; layering multiple concepts and metaphors to construct the tangible as global sediment onto the flow.

The act of demarcation lies at the core of what we do as human beings. The architecture should become a multiple-metaphor of the environment in and around NZG. To humanize nature, is to breathe spirit into matter (Harries, 1998: 358). To be human, this spirit should be breathed in. Animatechnic is the playful escapism of making, the 'imaginative, spiritual creative ability', the mediation between the unconscious and conscious mind.

IMG 034: opposite: A hypothetical summary of enclosure

IMG 035: following page: Timeline of the evolution of ZOOs from the Stone Age to Modern times, containing international and national entries³



STONE AGE	ANTIQUE AGE	MIDDLE AGES	RENAISSANCE	MODERN TIME
2900 - 2200 BC	1501 - 1447 BC			
	1100 BC			
	900 BC			
	669 - 626 BC			
	605 - 562 BC			
	2000 - 300 BC			
	323 - 247 BC			
	116 - 27 BC			
		742 - 814		
		1100 - 1135		
			1519	
			1530 - 1550	
			1552	
			1558	
			1613	
			1765	
			1699 - 1706	
			1809	
			1826	
			1828 - 1865	
			1860	
			1870	
			1891	
			1895	
			1899	
			1901	
			1902	
			1903	
			1904	
			1906	
			1907	
			1910	
			1911	
			1912	
			1913	
			1913	
			1915	
			1921	
			1926	
			1928	
			1932	
			1933	
			1933	
			1938	
			1940	
			1942	
			1946	
			1959	
			1972	
			1974	
			1975	
			1980	
			1982	
			1978	



THE PASSION FOR COLLECTING (1500s – 1700s)



ANCIENT TROPHIES



POPULAR PLEASURES

THE ARISTOCRACY'S NEW-FOUND CURIOSITY



BAROQUE SCENOGRAPHY



THE NEED FOR CONTROL (1800s)



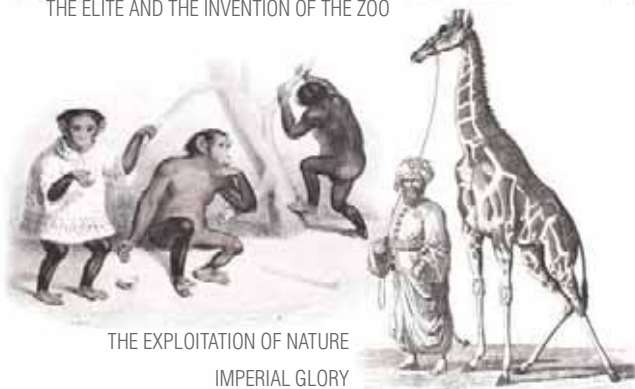
THE YEARNING FOR NATURE (1900s)



THE ELITE AND THE INVENTION OF THE ZOO



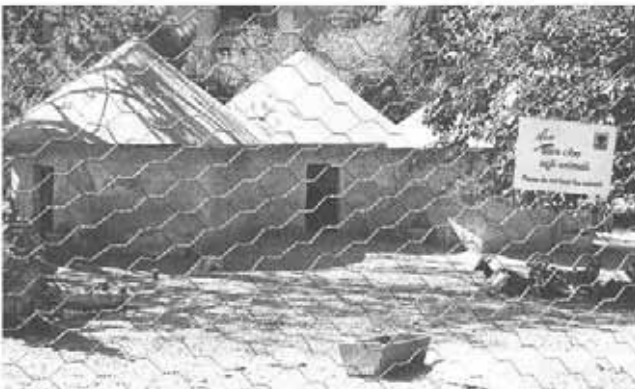
A PUBLIC QUEST



THE EXPLOITATION OF NATURE
IMPERIAL GLORY



THE ILLUSION OF LIBERTY



THE THRILL OF THE WILD



THE IMITATION OF NATURE



THE WORLD



AFRICA



SOUTH AFRICA



GAUTENG



TSHWANE

001	KOALA	077	OKAPI
002	QUEENSLAND KOALA	078	PERE DAVID'S DEER
003	PARMA/WHITE-FRONTED WALLABY	079	SPOTTED DEER
004	RED KANGAROO	080	HOG DEER
005	ROCK HYRAX	081	MANCHURIAN SIKA DEER
006	SOUTH AFRICAN BUSH ELEPHANT	082	NORTHERN BARASINGHA
007	LINNE'S TWO-TOED SLOTH	083	FALLOW DEER
008	GIANT ANTEATER	084	NILGAI
009	SOUTH AFRICAN HEDGEHOG	085	CAPE BUFFALO
010	RING-TAILED LEMUR	086	DWARF FOREST BUFFALO
011	BLACK LEMUR	087	DOMESTIC CATTLE, BREED UNSPECIFIED
012	MONGOOSE LEMUR	088	DOMESTIC CATTLE, NGUNI
013	SOUTHERN LESSER GALAGO	089	GAUR
014	BLACK-AND-WHITE RUFFED LEMUR	090	BUSHBUCK
015	BLACK-EARED MARMOSET	091	NYALA
016	GOLDEN LION TAMARIN	092	EASTERN BONGO
017	COMMON SQUIRREL MONKEY	093	LESSER KUDU
018	LION-TAILED MACAOUE	094	GREATER KUDU
019	HAMADRYAS BABOON	095	SOUTHERN GREATER KUDU
020	CHACMA BABOON	096	COMMON ELAND
021	RED-CAPPED MANGABEY	097	CAPE ELAND
022	SOUTH AFRICAN VERVET	098	BLUE DUiker
023	MOZAMBIQUE SAMANGO MONKEY	099	GREY/COMMON DUiker
024	LESSER SPOT-NOSED MONKEY	100	ROAN ANTELOPE
025	BLACK-AND-WHITE COLOBUS	101	SABLE ANTELOPE
026	PATAS MONKEY	102	SCIMITAR-HORNED ORYX
027	RED-/BUFF-CHEEKED GIBBON	103	GEMSBOK
028	LAR GIBBON	104	ARABIAN ORYX
029	WESTERN GORILLA	105	ADDAX
030	CHIMPANZEE	106	SPRINGBOK
031	EGYPTIAN FRUIT BAT	107	BLACKBUCK
032	CAPE SEROTINE BAT	108	MHORR GAZELLE
033	EGYPTIAN FREE-TAILED BAT	109	ADDRA GAZELLE
034	LION	110	STEENBOK
035	LEOPARD	111	KLIPSPRINGER
036	TIGER	112	SICHUAN TAKIN
037	CHEETAH	113	TRANSCASPIAN/ARKAL URIAL SHEEP
038	CARACAL	114	DOMESTIC GOAT, KALAHARI RED
039	SERVAL	115	DOMESTIC GOAT, CAMEROON DWARF GOAT
040	SMALL-SPOTTED GENET	116	NUBIAN IBEX
041	STRIPED HYENA	117	CHINESE GORAL
042	SPOTTED HYENA	118	COMMON WATERBUCK
043	WHITE-TAILED MONGOOSE	119	SOUTHERN LECHWE
044	MARSH MONGOOSE	120	REEDBUCK
045	SLENDER MONGOOSE	121	AFRICAN IMPALA
046	YELLOW MONGOOSE	122	SOUTH AFRICAN IMPALA
047	BANDED MONGOOSE	123	BLACK-FACED IMPALA
048	SLENDER-TAILED MEERKAT	124	GREY RHEBOK
049	AFRICAN WILD DOG	125	TSESSEBE
050	BAT-EARED FOX	126	BLESBOK
051	BLACK-BACKED JACKAL	127	RED HARTEBEEST
052	MANED WOLF	128	BLACK WILDBEEST
053	KODIAK BEAR	129	BLUE WILDBEEST
054	RED PANDA	130	DOMESTIC RABBIT
055	STRIPED POLECAT	131	SCRUB HARE
056	SOUTH AMERICAN FUR SEAL	132	CAPE GROUND SQUIRREL
057	SOUTH AFRICAN FUR SEAL	133	TREE SQUIRREL
058	DONKEY	134	AFRICAN CRESTED PORCUPINE
059	SPANISH DONKEY	135	GUINEA PIG
060	DOMESTIC HORSE		
061	PRZEWALSKI'S WILD HORSE		
062	COMMON ZEBRA		
063	MALAYAN TAPIR		
064	SOUTHERN WHITE RHINOCEROS		
065	SOUTHERN BLACK RHINOCEROS		
066	BACTRIAN CAMEL		
067	SULAWESI BABIRUSA		
068	WARTHOG		
069	RED RIVER HOG		
070	SOUTHERN BUSH PIG		
071	DOMESTIC PIG, BREED UNSPECIFIED		
072	DOMESTIC PIG, SOUTH AFRICAN LANDRACE PIG		
073	DOMESTIC PIG, VIETNAMESE POT-BELLIED PIG		
074	PYGMY HIPPOPOTAMUS		
075	HIPPOPOTAMUS		
076	GIRAFFE		

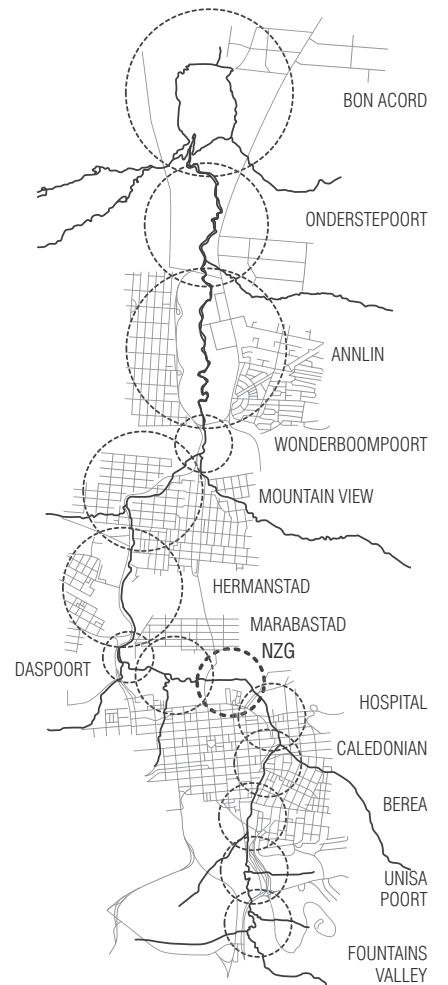
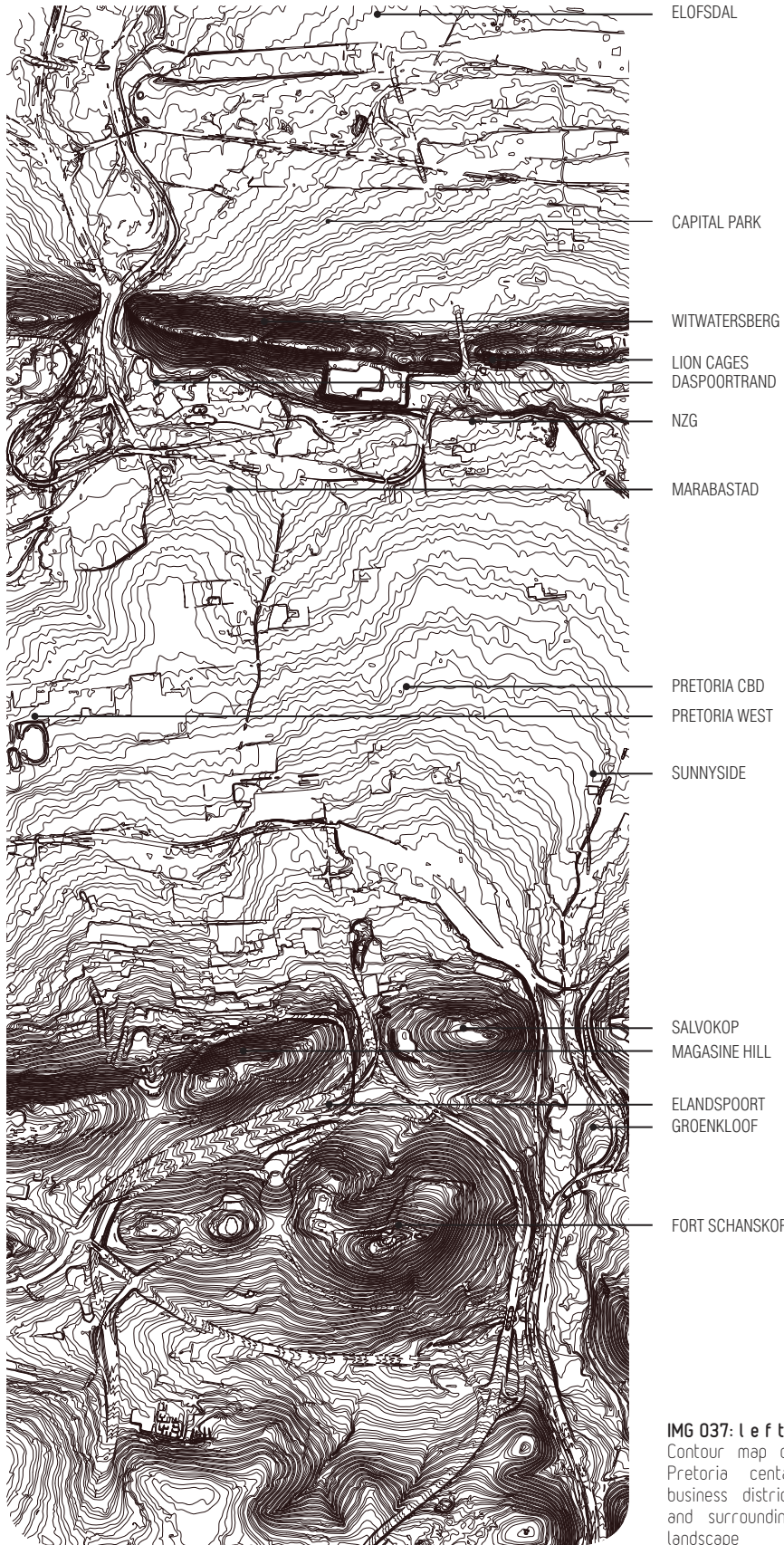




4. NZG/SITE



IMG 036: Listed 'forced migration' of mammalia in NZG: Animals from their original habitats to ZOO4



IMG 037: left:
Contour map of Pretoria central business district and surrounding landscape



IMG 038: Views to the north and to the south (towards the city) from cable car building on the highest ridge of NZG



IMG 039: opposite: Apies River precincts around NZG in Pretoria

IMG 040: Metropolitan circulation routes around NZG



IMG 041: Locality plan of areas surrounding NZG within an 8km radius of the site

IMG 042: opposite: Factors to consider when working with a zoo master plan (Adapted from Fiby & Worstell, 2003)

4. NZG/SITE

4.1 DEVELOPMENT OF NZG



4.1.1 BACKGROUND

The development goals of zoos should be guided with knowledge and understanding of the contradictions between philosophies and the realities of animals, people, nature and technology within the dictates of the current social context and time to provide facilities that will enhance the functioning of the zoo. The development of zoos universally includes the following goals: Recreation, Education, Conservation and Research (Dry, Mokoena & Partners, 1991).

NZG is a vital science advancement platform in South Africa being the largest zoo in the country (85-hectare) and the only one with national status (NZG, 2011). NZG is currently affiliated with the South Africa's National Research Foundation (NRF); as such, its mandate is not only to conduct and facilitate research, but also to advance awareness and knowledge of the natural sciences (Oberprieler: 2011).

Recreation is arguably the most important goal as it is the reason why most people attend a zoo. However, through an integrated designed experience visitors can be educated via interpretive messages. Education in turn could inform visitors and inspire change in their actions and views on conservation and the research contributing to the improvement thereof. The discussions held during the PAZAAB conference 2011 presented various opportunities and challenges surrounding current issues in the zoo community in their attempt to provide holistic conservation education. Conservation Education is an important component of environmental education aimed at increasing public awareness of conservation issues

and changing the attitudes and behaviour of the public to promote environmental conservation (De Jager, 2011). This is echoed in NZG's mission: *Inspired conservation of wildlife through knowledge, understanding and connection.*

Craig Allenby (2011) believes that the experience management of animal enclosures within zoos has evolved greatly as a result of research and the contemporary trends of immersive design. The interest in improving the quality of life of captive animals has led to the development of environmental and behavioural enrichment, which offers stimulation and enhances animal health. Enrichment provides captive animals with opportunities to express species-specific behaviour and allows them to make choices. *Immersion design* means simply immersing visitors in the theme of the story. Whether it's placing visitors in a re-creation of an Asian rainforest, or a South African safari lodge, people, animals, plants and built forms all share the unique, memorable setting, free from distracting or discordant elements. According to Allenby the visitor's experience has not received the same attention as the work done on animals and if the vision of NZG - *Nature and Humanity in Balance* - was realised the realities and authenticity of both the animal and human visitors would progress.

4.1.2 NZG MASTER PLAN

The only master plan of NZG to date was commissioned by the Department of Public Works and Land Affairs on 24 August 1989. This 'Master Plan for the National Zoological Gardens of South Africa'; Volume 1 and Volume 2 were completed by the firm of Dry and Joubert Architects in 1991.

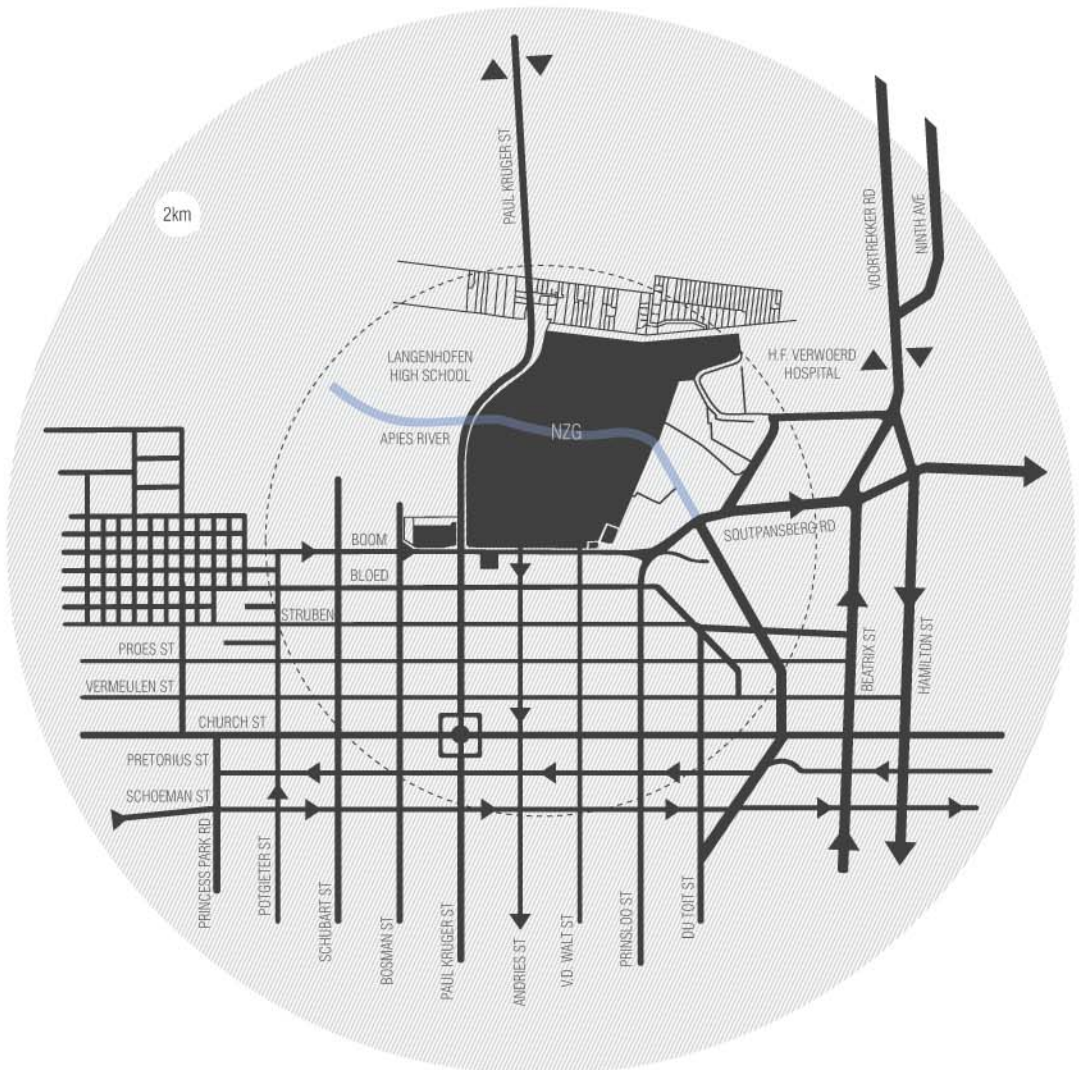
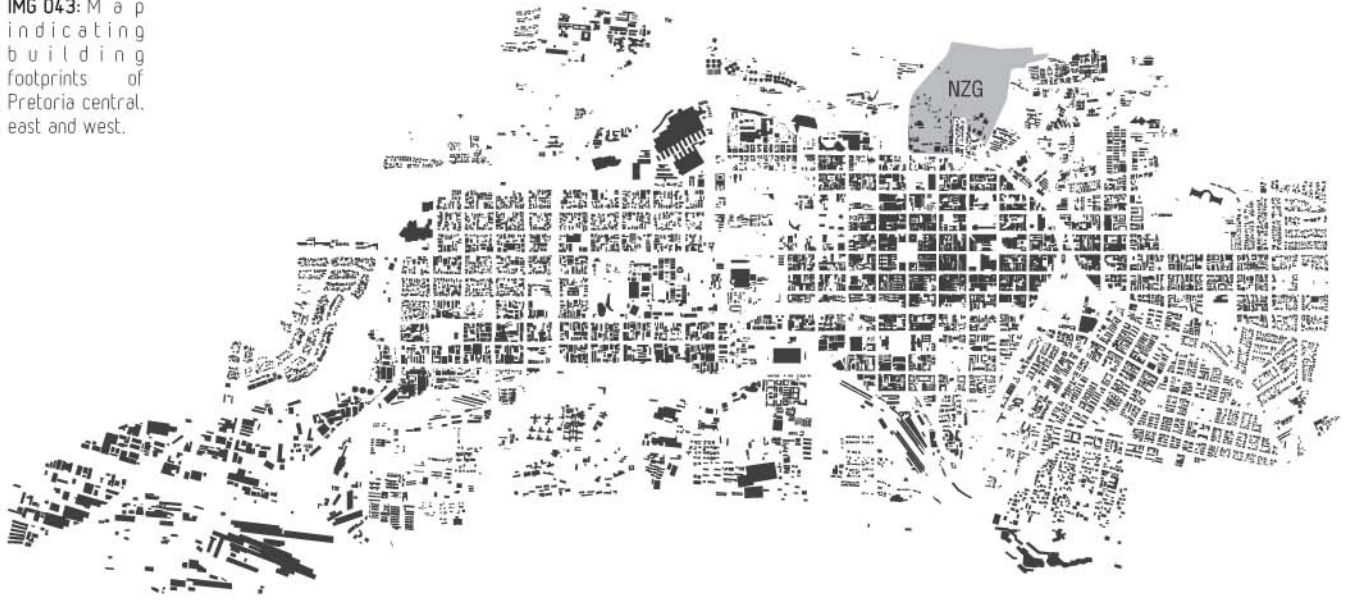
In June 1996 the firm Dry Mokoena & Partners was instructed by the Department of Public Works to expand the original document. The assignment related to specific problems and areas that have changed or developed since the original document was produced.

Historically the expansion of NZG's animal collection was managed on an *ad hoc* basis (Craig Allenby, 2011). This unsuitable growth is bound to change under the new 'Animal Collection Plan' being prepared by Mike Jordan (2011) as senior advisor on the collection. This will dictate an increase in local and African species (to 70%) and a decrease of the exotic species (to 30%). The plan will facilitate a shift to a more focussed research and conservation based ideal.

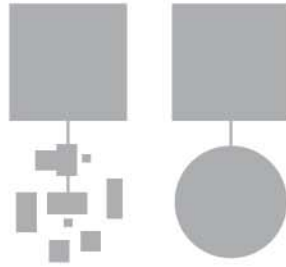
4.1.3 CLIENTS

Good clients create good buildings (Edwards, 2005: 67-96). SAASTA is a business unit of the National Research Foundation (NRF)⁵ with the mandate to advance public awareness, appreciation and engagement of science, engineering and technology in South Africa. SAASTA derives its core funding via the NRF from the Department of Science and Technology (DST). SAASTA's contribution to the NRF's vision is to grow the pool of quality learners through three key strategic areas that are interdependent, each enhancing the effectiveness of the other (SAASTA, 2011). Further the NRF itself is a science council and as such is a non-profit entity; therefore the project will most likely be a joint venture between the NRF and private investors.

IMG 043: Map indicating building footprints of Pretoria central, east and west.



IMG 044: Access routes and the position of the NZG site within the city of Pretoria

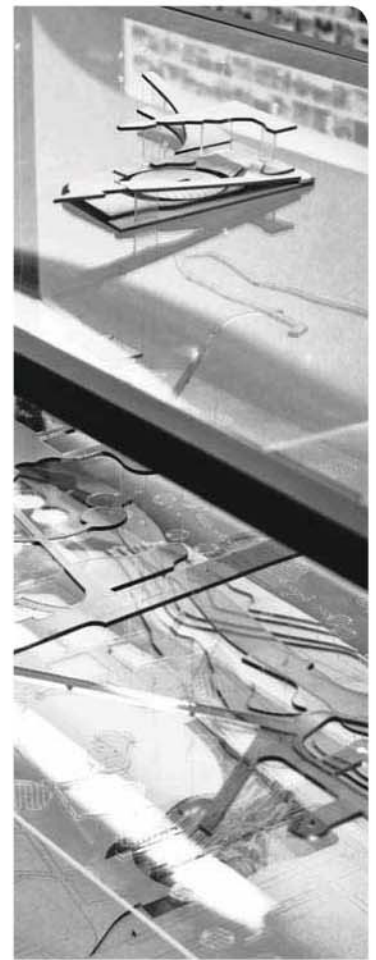


Ultimately, the look and feel of ZOO exhibits is symbolic of the linkages we try to make between our increasingly urban world and the receding domain of nature (Bierlein, 2003).



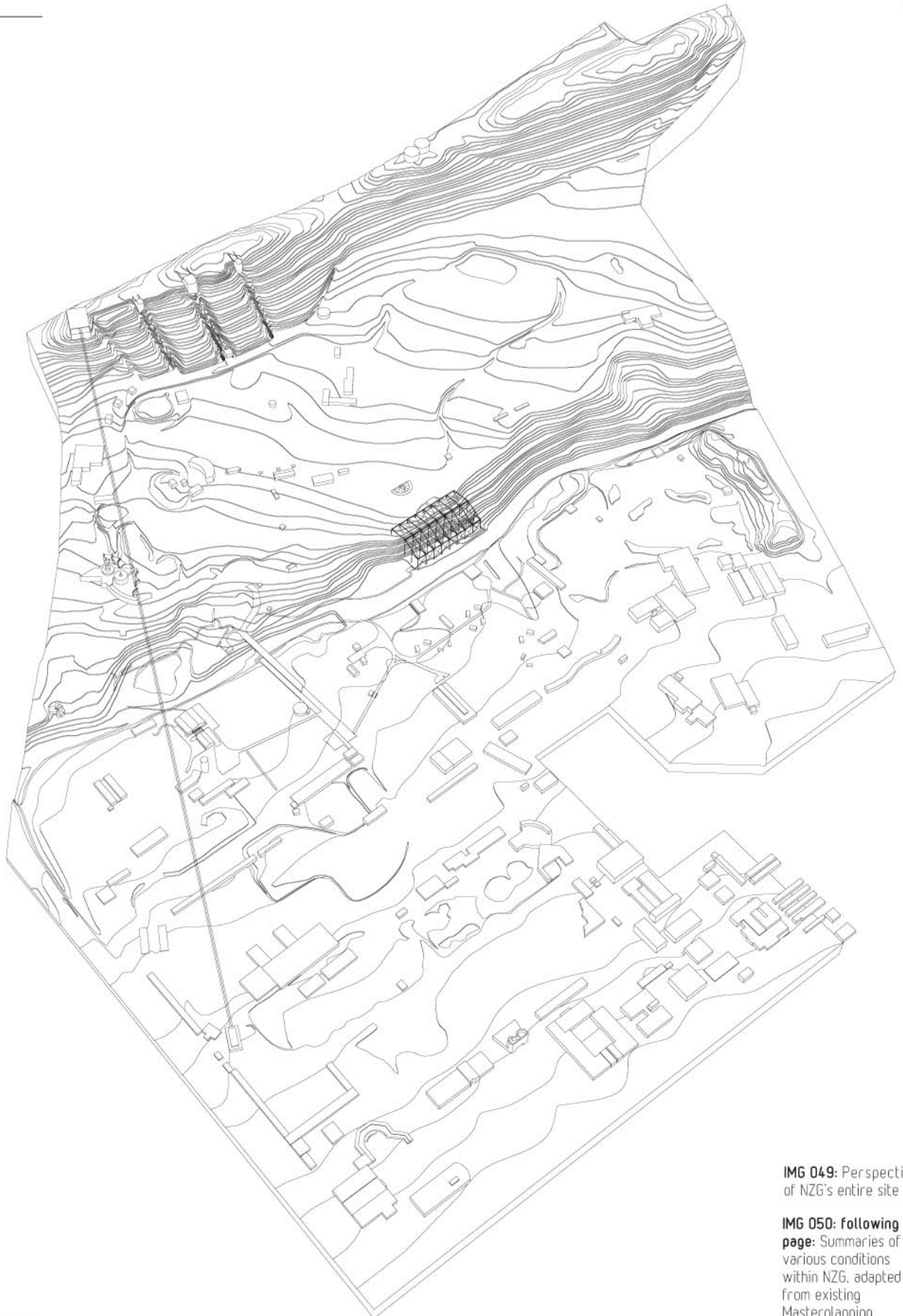
IMG 045: above: View of the city from the carnivore enclosures at the foot of the ridge showing the juxtaposition of the city against the NZG gardens

IMG 046: left: Isometric view of the Jardin des Plantes, Paris, 1842, as emphasis, showing or indicating the juxtaposition of the formal against the informal type gardens



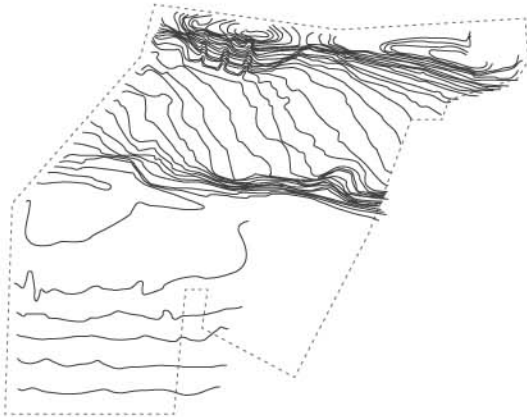
IMG 047: left: Exploded view of NZG indicating the topography along with the pathways and the existing buildings

IMG 048: above: Drawings of the physical site model that illustrates the layering of the grounds along the Apies River

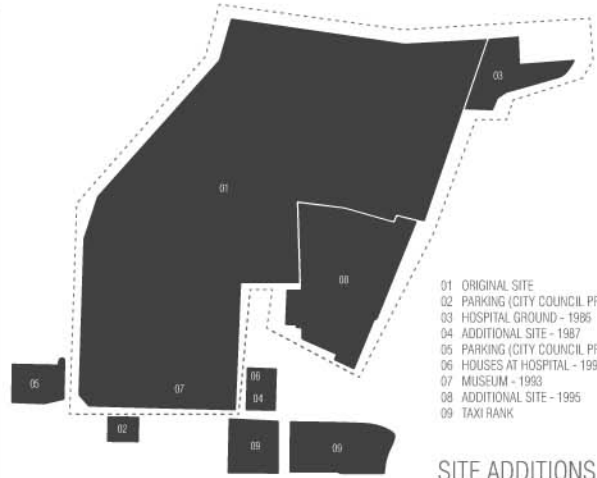


IMG 049: Perspective of NZG's entire site

IMG 050: following page: Summaries of various conditions within NZG, adapted from existing Masterplanning



CONTOUR PLAN



- 01 ORIGINAL SITE
- 02 PARKING (CITY COUNCIL PROPERTY) - 1978
- 03 HOSPITAL GROUND - 1985
- 04 ADDITIONAL SITE - 1987
- 05 PARKING (CITY COUNCIL PROPERTY) - 1988
- 06 HOUSES AT HOSPITAL - 1992
- 07 MUSEUM - 1993
- 08 ADDITIONAL SITE - 1995
- 09 TAXI RANK

SITE ADDITIONS



- 01 RED STRUCTURED SANDY CLAY
- 02 SANDY LOAM TO SANDY CLAY LOAM
- 03 RED APEDAL ACID SANDY LOAM
- 04 YELLOWISH BROWN MOTTLED SANDY LOAM
- 05 HYDROMORPHIC SANDY CLAY TO CLAY
- 06 GREYISH BROWN SANDY LOAM
- 07 QUARTZITE ROCK

DETAIL SOIL SURVEY



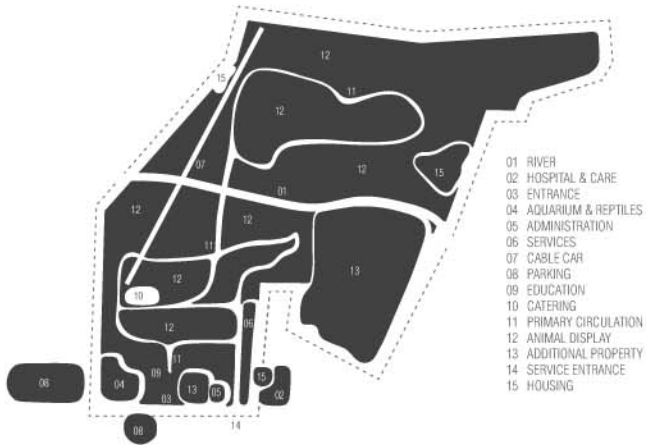
EXISTING ACCOMMODATION



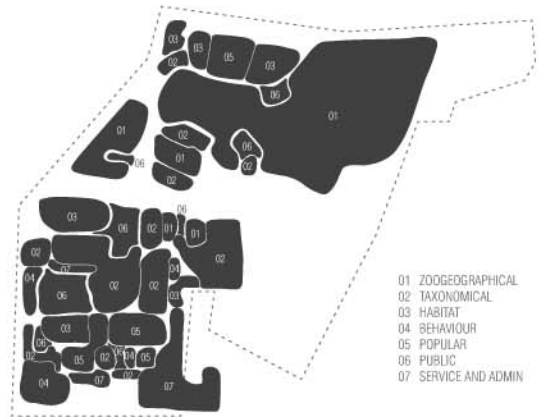
ACCOMODATION TO BE DEMOLISHED



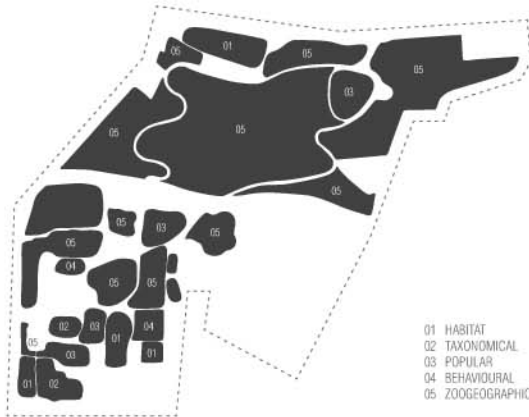
ACCOMMODATION TO REMAIN



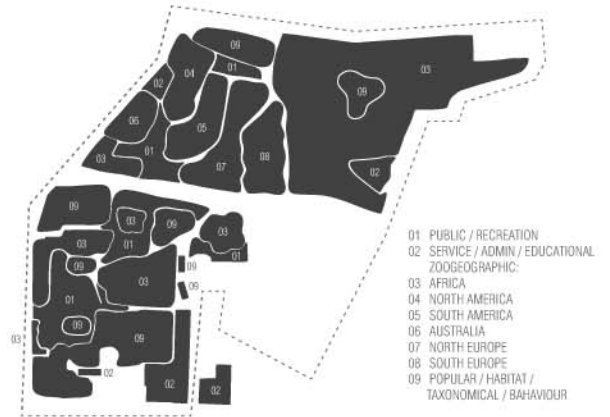
ZONING LAYOUT



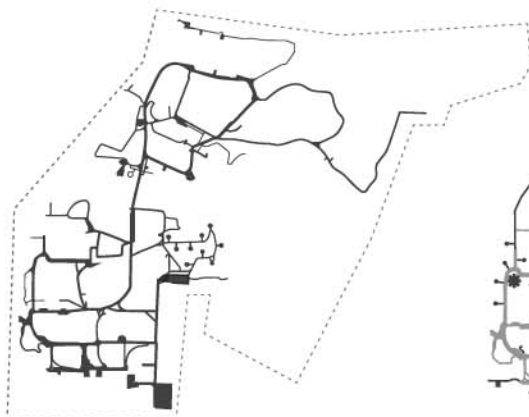
EXISTING ZONING



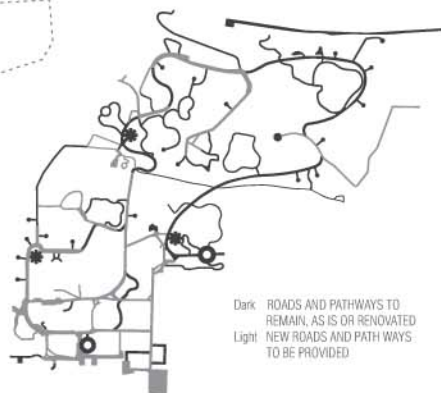
PROPOSED ZONING



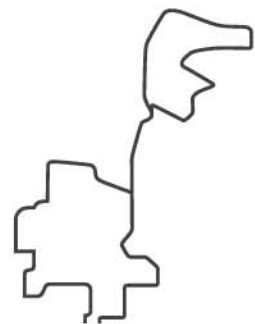
PROPOSED DETAIL ZONING



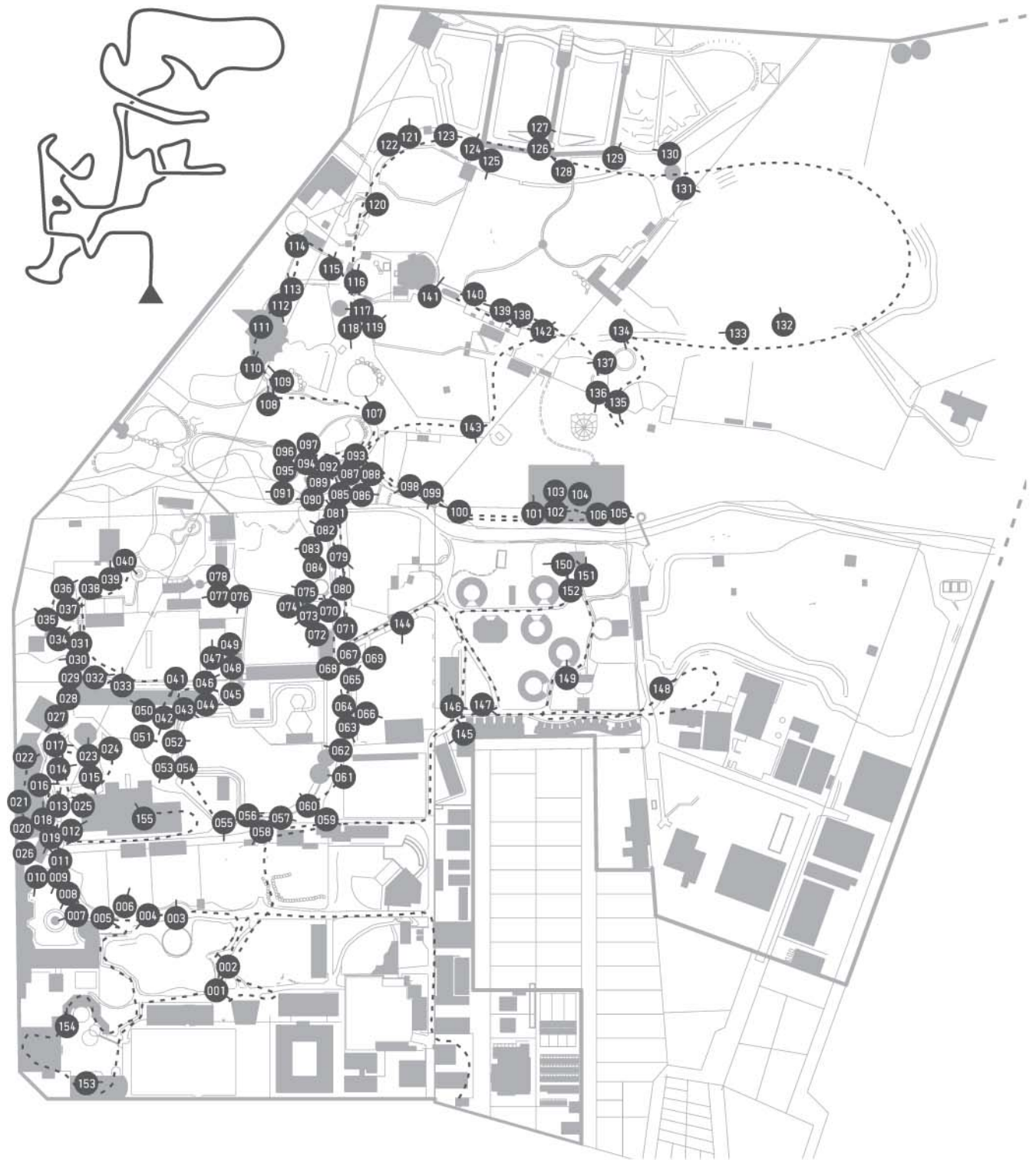
CIRCULATION EXISTING



PROPOSED CIRCULATION



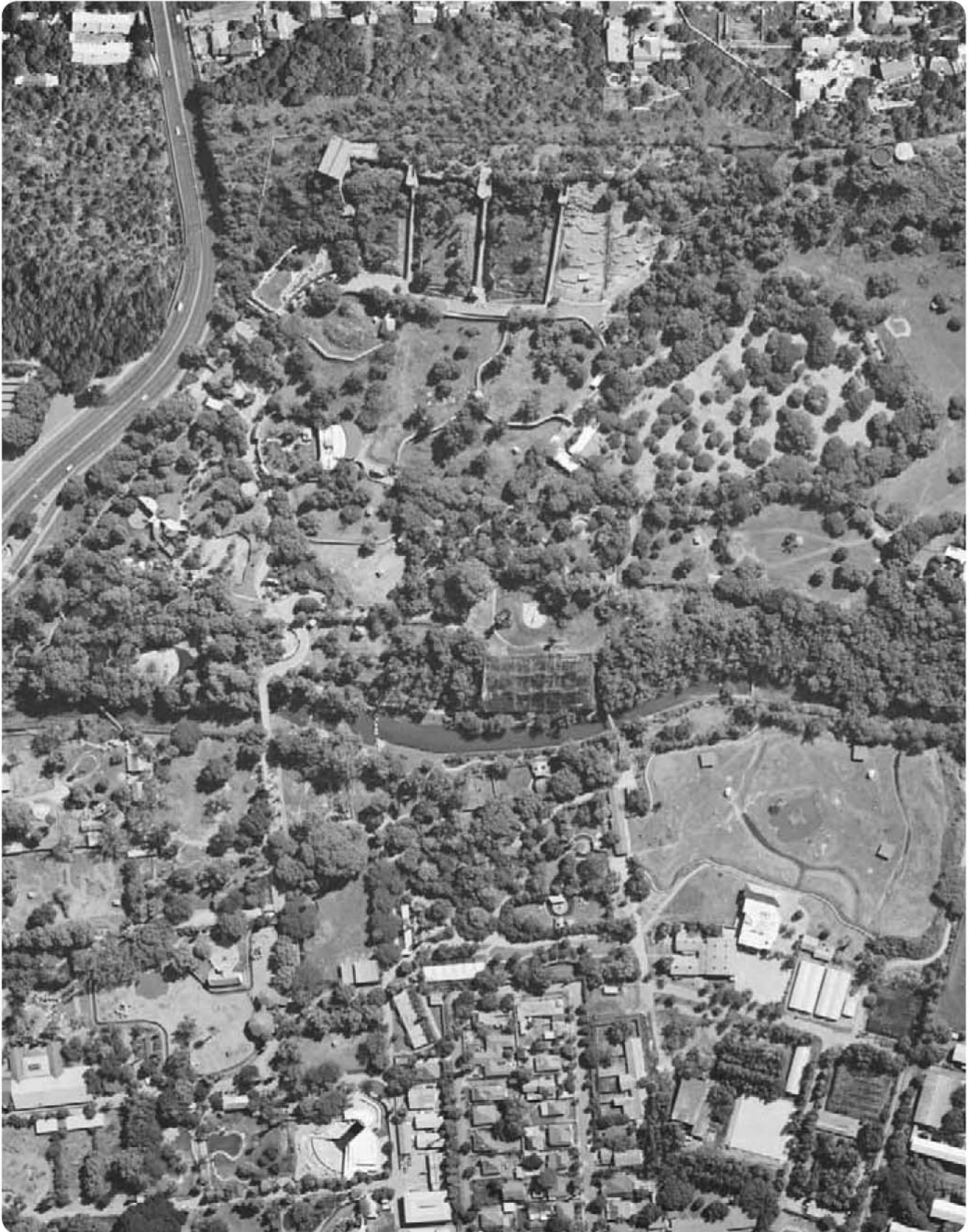
ZOOLOOP



IMG 051: Site plan of NZG mapping author's journey on 26 April 2011

IMG 052: **opposite:** Aerial photograph of NZG

IMG 053: **following page:** Photographic journal of author's journey in NZG - Numbered according to map of journey







001 NZG MAIN ENTRANCE 002 RUBBER TREE VISIBLE ON ENTRANCE 003 MHORR GAZELLE EXHIBIT 004 HISTORICAL STEPS 005 HISTORICAL STAIRS 006 ARABIAN DRYX EXHIBIT 007 HISTORICAL SAMMY MARKS FOUNTAIN 008 SAMMY MARKS FOUNTAIN & HISTORICAL INFORMATION SIGNAGE 009 BIRD EXHIBITS 010 BIRD EXHIBITS 011 APPROACH TO CABLE CAR BUILDING 012 TEMPORARY PRESENTATION 013 CABLE CAR LINES CROSS PATHWAY 014 CABLE CAR LINE STRUCTURES 015 RESTAURANT DROP OFF 016 RESTAURANT 017 OPEN SPACE IN FRONT OF RESTAURANT 018 PATHWAY FROM CABLE CAR BUILDING 019 CABLE EXITING 020 MEDIUM SIZED PRIMATE EXHIBITS 021 MEDIUM SIZED PRIMATE EXHIBITS FEATURING PLASTERED ART ROCK 022 ENCLOSURE CUTS THROUGH TREE'S CANOPY 023 LION RIDE ON GAMING PLATFORM 024 COVERED GAMING PLATFORM 025 JUNGLE TRAIN AND TICKET OFFICE 026 CABLE CAR BUILDING WITH BRUTALIST BUILDING IN BACKGROUND 027 MEDIUM SIZED PRIMATE ENCLOSURES 028 PLANTED BARRIER WITH RAILINGS TO SIDES 029 PLANTED BARRIER WITH RAILINGS TO SIDES 030 BLACKBUCK, HOGDEER & NILGAI EXHIBIT WITH UNEARTHED ROOTS OF WITSTINKHOUT TREE 031 PATHWAY TOWARDS FARM YARD 032 BIRD CAGES 033 AFRICAN BUFFALO EXHIBIT 034 GUMPOLE FARM YARD ENTRANCE 035 NGUNI CATTLE KRAAL WITH NZG BOUNDARY WALL IN BACKGROUND 036 SEATING 037 WAGONS & VIEW OF FARM YARD 038 FARM YARD ENTRANCE & DOMESTIC PIG ENCLOSURES 039 STABLES 040 BON FIRE CIRCLE 041 STEEL DECORATION DETAILS ON BIRD CAGE 042 RESTAURANT 043 ELEPHANT ENCLOSURE 044 PAVED WALKWAY 045 FRIENDS OF THE ZOO BUILDING 046 LAR-GIBBON ENCLOSURE 047 MALAYAN TAPIR ENCLOSURE 048 LAR-GIBBON ENCLOSURE 049 COVERED WALKWAY 050 KEEPER'S ENTRANCE TO BIRD CAGES 051 FENCE 052 ELEPHANT ENCLOSURE 053 RESTAURANT 054 RESTAURANT 055 FLAMINGO ENCLOSURE 056 DRY MOAT BARRIER & FENCING AT ELEPHANT ENCLOSURE 057 HISTORICAL BEAR HOUSE 'ZOOVENIER' SHOP 058 HISTORICAL LION CAGE 059 HISTORICAL CAGES ENCLOSED BY CONTEMPORARY STRUCTURE 060 ELEPHANT ENCLOSURE 061 ELEPHANT SHOW KITCHEN 062 HISTORICAL ELEPHANT HOUSE 063 WATER MOAT AT GIRAFFE ENCLOSURE 064 CENTRAL PATHWAY TO BRIDGE 065 GIRAFFE EXHIBIT 066 GIRAFFE STABLES 067 LIFTED FOR BETTER VIEW 068 LEMUR ENCLOSURE 069 ISLAND AND SLATE WORK IN GIRAFFE EXHIBIT 070 PICNIC KIOSK 071 PATHWAY TO BRIDGE 072 ELEPHANT CONFERENCE FACILITY BORDERING PICNIC TERRAIN 073 PICNIC TERRAIN 074 PICNIC TERRAIN 075 PICNIC TERRAIN & FARM YARD IN BACKGROUND 076 KEEPER'S ENTRANCE 077 FARM YARD VIEWED FROM PICNIC TERRAIN 078 FARM YARD 079 WHITE RHINO EXHIBIT 080 CHILD VIEWING WHITE RHINO 081 PICNIC TERRAIN ON APIES RIVER 082 PICNIC TERRAIN 083 PICNIC TERRAIN 084 PICNIC TERRAIN 085 BRIDGE OVER APIES RIVER 086 RIVER TO EAST FROM BRIDGE 087 RIVER'S EDGE 088 RIVER'S EDGE 089 RIVER'S EDGE 090 RIVER TO WEST FROM BRIDGE 091 RIVER TO WEST FROM BRIDGE 092 BRIDGE RAILING 093 WATER FEATURES 094 VIEW TO HIPPO POOLS 095 HIPPO POOL 096 HIPPO POOL 097 HIPPO POOL VENUE 098 BRIDGE 099 RIVER TO EAST OF BRIDGE 100 PATHWAY NEXT TO RIVER 101 CHILD CLIMBING ON LANDSCAPED WATER FEATURE IN 'BIRD PARADISE' AVIARY 102 AVIARY WALKWAY 103 EDGE OF WALKWAY 104 RAISED PLATFORMS IN AVIARY 105 SMALLER BRIDGE OVER RIVER 106 AVIARY WALKWAY 107 WATER FEATURE 108 KOALA FACILITIES 109 KOALA DISPLAY ENTRANCE 110 KOALA ENCLOSURE 111 KOALA FACILITY CLINICAL INTERIOR 112 KANGAROO EXHIBIT 113 WALKWAY IN 'AUSTRALIA' 114 NZG BOUNDARY VISIBLE 115 WALKWAY 116 GORILLA EXHIBIT 117 HISTORICAL EILEEN ORPEN AVIARY 118 PATHWAY 119 PATHWAY 120 FUR SEAL EXHIBIT 121 BEAR ENCLOSURE 122 BEAR ENCLOSURE GLASS BARRIER 123 CARNIVORE ENCLOSURES 124 HISTORICAL LOOKOUT TOWERS 125 CBD FROM CARNIVORE ENCLOSURES 126 LION ENCLOSURE 127 LION ENCLOSURE WALL 128 VIEWING HUT 129 BARBARY SHEEP EXHIBIT 130 BARBARY SHEEP EXHIBIT 131 EDUCATIONAL SIGNAGE 132 BLACK RHINO EXHIBIT 133 PATHWAY 134 DASSIE HILL 135 SKYLINE BEYOND AVIARY 136 SKYLINE BEYOND AVIARY & SUNDIAL 137 RED RIVER HOG EXHIBIT 138 HOG EXHIBITS 139 WALKWAY TO GORILLA FACILITY 140 LOOKOUT TOWER 141 VIEW OF CARNIVORE HILL 142 OKAPI 143 AFRICAN WILD DOGS 144 GIRAFFE STABLES 145 VISITOR INTERACTION 146 OWL HOUSE 147 PRIMATE ENCLOSURES 148 VENUE ON SAVANNAH 149 CIRCULAR ENCLOSURES 150 SPOTTED HYENA 151 BIRD PARADISE AVIARY 152 SPIRAL PAVING 153 KOMODO DRAGON EXHIBITION FACILITY 154 SNAKE EXHIBIT 155 RESTAURANT INTERIOR

4.2 PATHWAYS

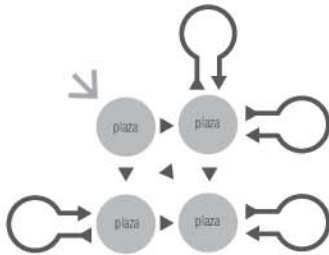
More than 600 000 people visit the grounds annually walking the approximately 6km total length of walkways (NZG, 2011). Small beacons aligned with the pathways intrigues and draw the visitor into directions from a distance; the full-grown wild fig tree (*Ficus Microphylla*) at NZG's main entrance, and the Sammy Marks Fountain serves as good examples.

To have a successful visitor experience it is not enough to work at the level of each individual exhibit, but it is mandatory to organize visitor circulation for the whole of NZG. There are infinite circulation configurations because each zoo has its own development history, mostly over a long period of time, with many small improvements, and without much planning. However, there are some basic schemes that tend to be repeated: those without hierarchy and those with some degree of hierarchy.

Since visitor circulation is a key element that defines the visitor experience, and combats visitor fatigue, it must be planned and designed to maximize the zoo experience and to provide the structure for a coherent story line. This structure guides the visitor through the Zoo and enables the visitor to absorb the Zoo message subliminally and directly.

Landscape immersion can further add to circulation coherency by providing a landscape consistent with each theme. A seemingly natural, often disorienting, meander of the circulation system helps in further convincing the visitor of the reality of the unreal. It is also important for the visitor to have periodic contact with the original distribution spaces to allow re orientation. This re contact provides access to visitor services as the need occurs (Collados, Harrison & Yanez, 2005). A main central theme would be ideal to help with orientation and relaxation to work against fatigue due to the lengthy zoo loops.

The section of the Apies River, that divides NZG into its southern and northern parts, is one of the few sections where the river still appears in a natural state as opposed to the common concrete channelling. This natural strip provides an opportunity to expand the 'Zooloop' to the eastern and western parts of NZG. The dense growth and Witstinkhout (*Celtis Africana*) forest on the river banks creates the possibility to raise walkways into the canopy shelter. A diagrammatic proposal will be made that incorporates the concepts of circulation routes and central iconography as beacon to sprawl. The combined central themes further suit the concept of ZOO as *microcosm of the world*.



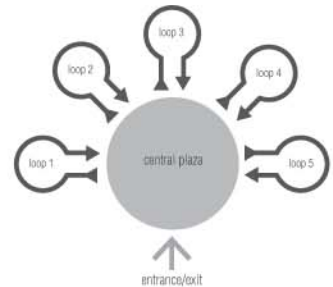
WITHOUT HIERARCHY

The most common configuration of zoos, due to development without planning. This presents multiple circulation options from a multitude of disparate distribution spaces. Visitors are easily disoriented, become lost, and as a result, miss many animal exhibits. It is consequently difficult to develop an appropriate educational story line.



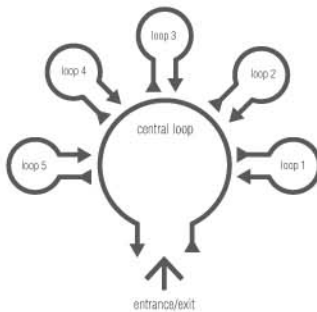
HIERARCHY & UNIQUE LOOP

The simplest example of a circulation pattern that emphasizes hierarchy. A single access point is provided, one distribution space and one loop through a complex of animal exhibits. Works well for small zoos with a single theme. For larger zoos with many parallel themes, a single, unique loop system is not practical since the animal exhibits along the loop become excessively and exhaustively long.



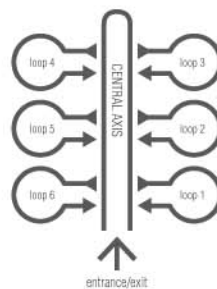
HIERARCHY & MULTIPLE LOOPS

For larger, complex zoos, several exhibit loops can begin and end at a central distribution space. Different themes can be developed for each loop, with the distribution space as the transition from one theme to the other. Visitors can select the zones and plan their own path. Service circulation can be located on the periphery of the zoo, thereby minimizing the conflict of crossings with visitor circulation.



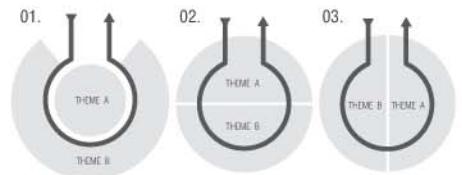
HIERARCHY & CENTRAL MAIN LOOP

A variation of the multiple loop type; A main loop functions as the central distribution space. This is typical for zoos that have an icon in the middle, such as a lake or a heritage structure, or a space that provides a traditional activity.



WITH HIERARCHY. CENTRAL AXIS

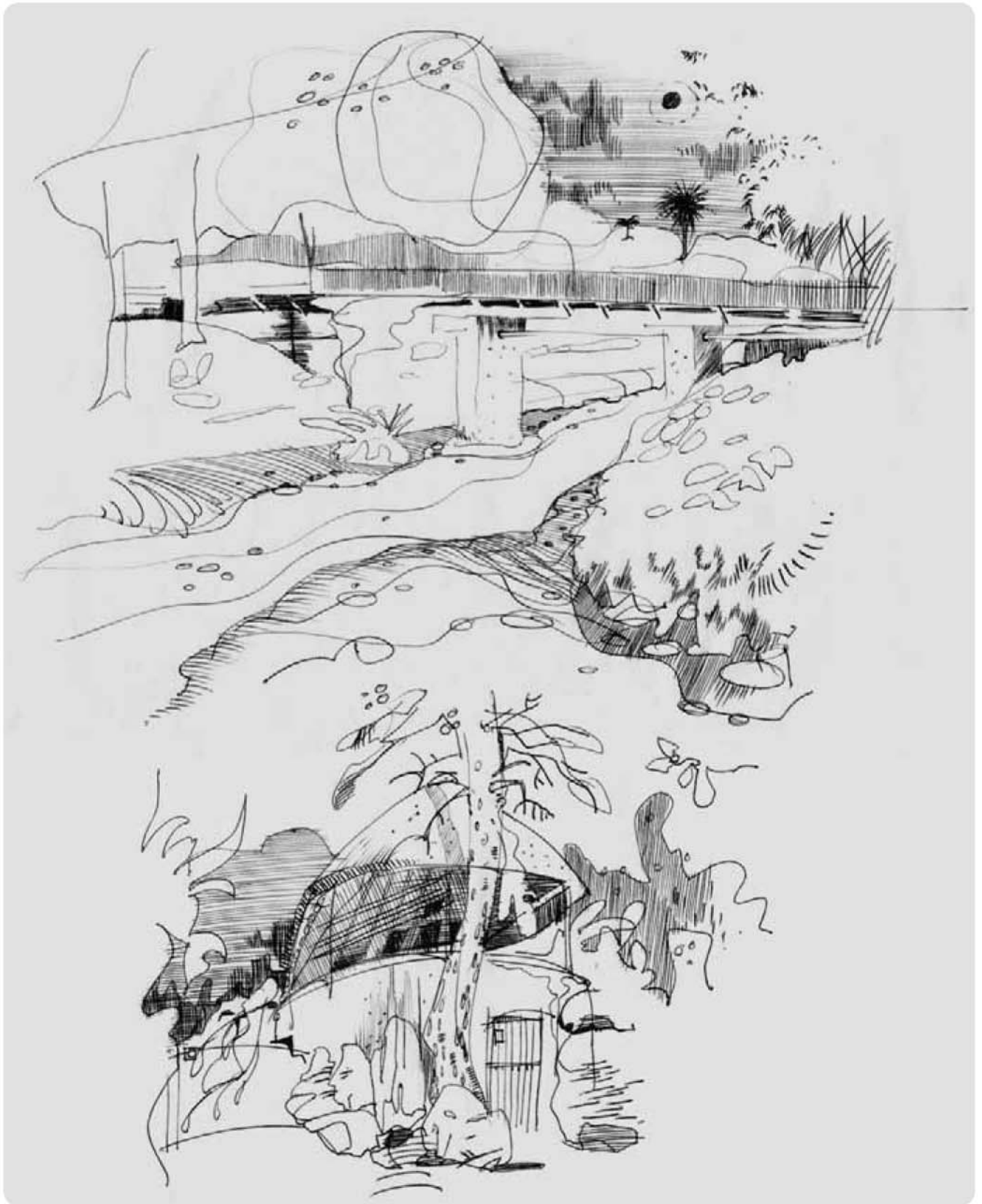
A further variation incorporates a central axis which functions as the distribution space. Its primary benefit is that it allows a long, distribution corridor that provides the opportunity for more loops originating from it and ending in it. This allows greater dispersion of visitors into the various exhibit zones.



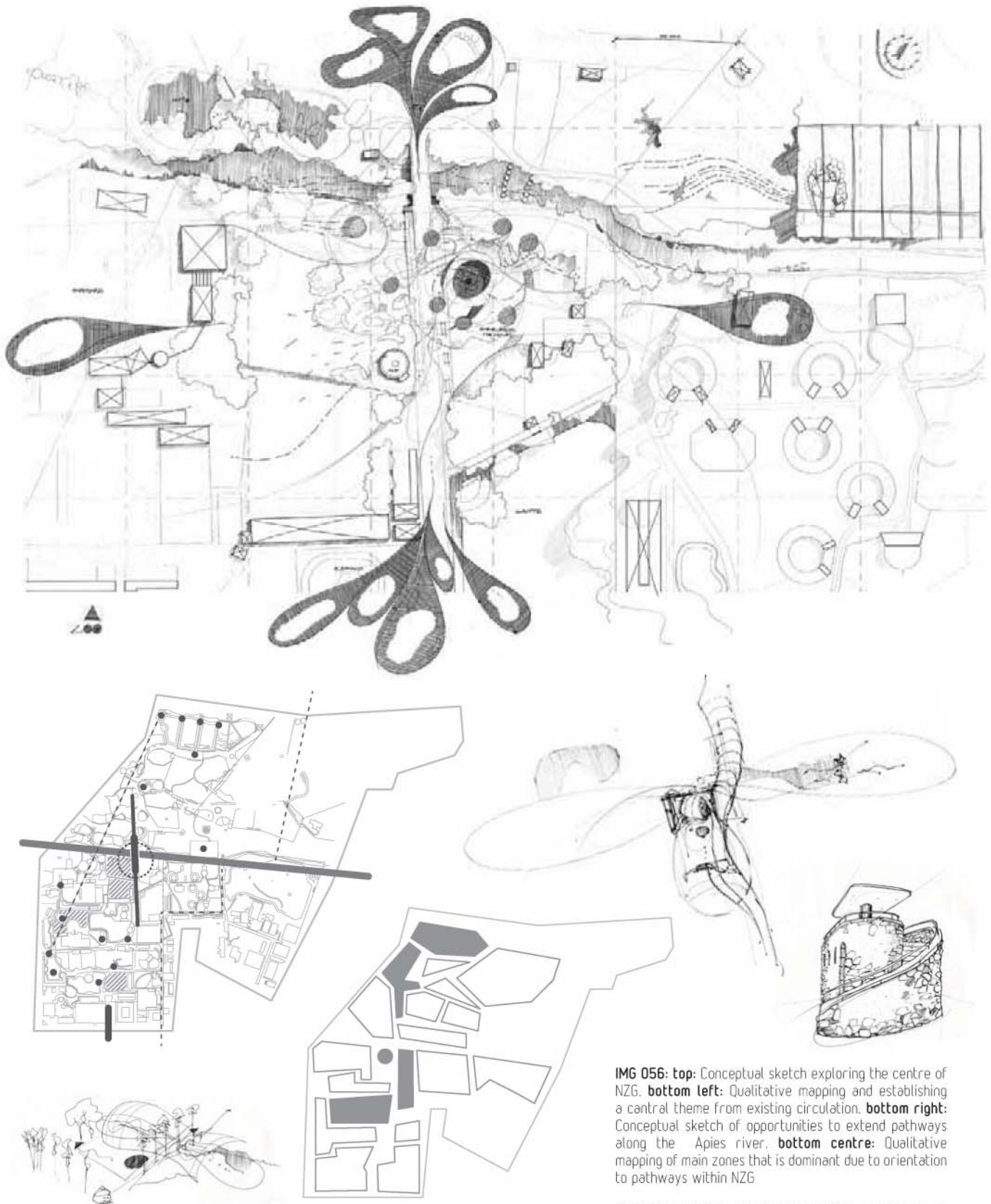
SUB THEME ZONES

Sub themes may arise within each theme zone or exhibit loop:

- 01: Themes on both sides of the visitor path is not recommended since attempts to create an immersion experience are lost. Interpretation of the parallel story lines is rendered impossible.
- 02: Passing through both themes on a unique loop presents an unfavourable problem in the return to the original distribution point, wherein it is necessary to retrace the path of the originating theme.
- 03: The most practical and useful solution is to position one theme at the beginning of a loop, succeeded by a single transition zone.



IMG 055: top: Sketch of the bridge over the Apies river bottom: Sketch of the hippo pool facilities



IMG 056: top: Conceptual sketch exploring the centre of NZG. bottom left: Qualitative mapping and establishing a central theme from existing circulation. bottom right: Conceptual sketch of opportunities to extend pathways along the Apies river. bottom centre: Qualitative mapping of main zones that is dominant due to orientation to pathways within NZG

IMG 057: opposite: Aerial photograph of possible site as central point in NZG



4.3 ARCHITECTURAL STYLE

The various architectural styles found in NZG embodies the disorganised fashion in which development in zoos normally take place. The 1991 NZG Master plan emphasizes the need to differentiate between building styles for animal use and human use in determining a style for NZG. With contemporary zoo development being inclined towards nature the Master plan suggested that future development refrains from making monumental or extravagant architectural statements; *to produce buildings that support rather than clash against the garden surroundings* (Dry & Joubert, 1991).

Dry and Joubert (1991) proposed that terracotta coloured concrete roof tiles be combined with clay bricks, for according to them this combination would present a basic, organic, non-obtrusive type building to which all future buildings should conform to help develop a homogenous, pleasant and definite architectural style.

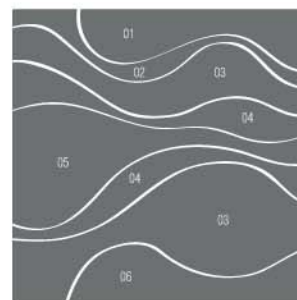
It was gathered from discussions during the PAZAAB Conference 2011 that the zoo is no place for architecture. This common perception could be ascribed to the tendency within the zoo community not to clearly distinguish between the design of exhibits and the other facilities needed by zoos as well as the aftermath of the human enclosure typologies (cages) that was used as animal enclosures. Yet there is still an opportunity to incorporate natural elements and create an inspiring type of architecture that blends better with the 'garden surroundings', for nature (which is inspiring and should be viewed as iconic) in essence encloses man and animal alike.

Terracotta and brick, although natural clay products is rather limiting as units – and less able to mould into forms than for instance concrete as material. The building as well as its setting can be merged through design to provide a sense of movement, mystery, and exploration through the use of an integrated approach to zoological architecture. It is believed that the contrary is true; a natural use of form (sculpted buildings) will be less intrusive and fuse better with the 'garden surroundings' than the small square shaped brick buildings that is scattered over NZG.

The typologies of animal enclosure along with the natural elements on site provides architectural intervention with a rich design vocabulary from which designs can be developed in which to 'exhibit' the visitors to NZG; a reinterpretation and representation of enclosure typologies for man and animal.

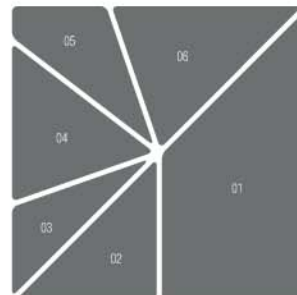


IMG 058: Bird paradise aviary's raised platforms



ZONING STRATEGIES

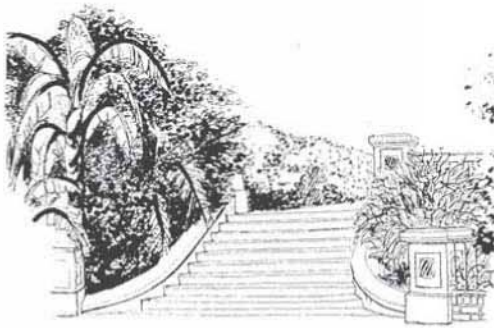
- 01 MOUNTAIN
- 02 DESERT
- 03 SAVANNAH
- 04 TROPIC
- 05 AQUATIC
- 06 ADMIN.



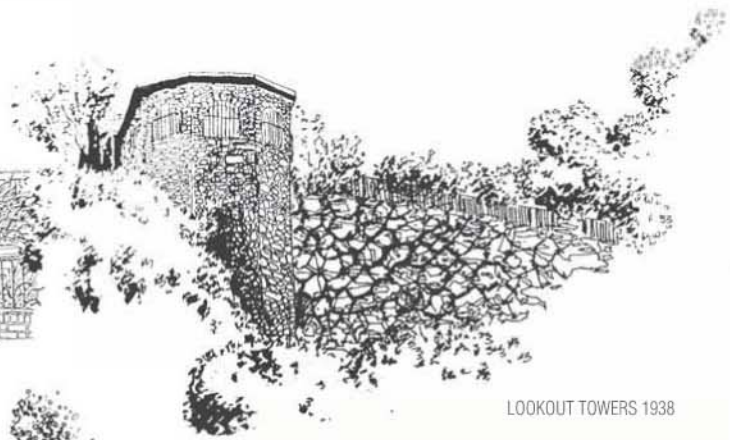
- 01 AFRICA
- 02 AUSTRALIA
- 03 N.AMERICA
- 04 S.AMERICA
- 05 EUROPE-N.ASIA
- 06 S. & S.E. ASIA

IMG 059: left: Zoning featuring zoographic and habitat orientated strategies

IMG 060: opposite: Historical buildings in NZG



HISTORICAL 'RUS IN URBE' STEPS [1895]

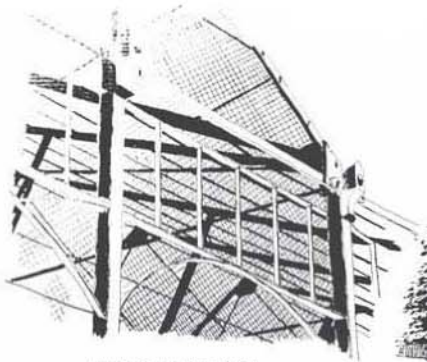
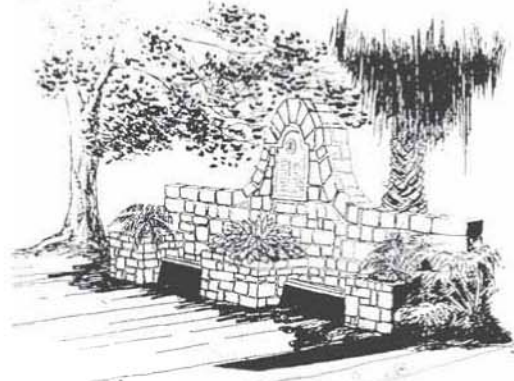


LOOKOUT TOWERS 1938



MUSEUM

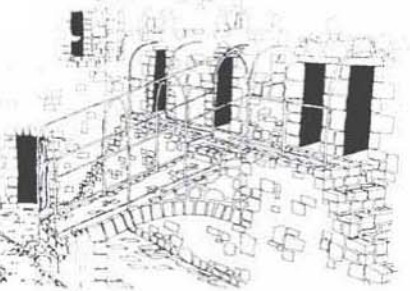
Dr GUNNING STONE BENCH



VULTURE AVIARY [1912]



SAMMY MARKS FOUNTAIN DONATED 1910



BEAR HOUSE 1911



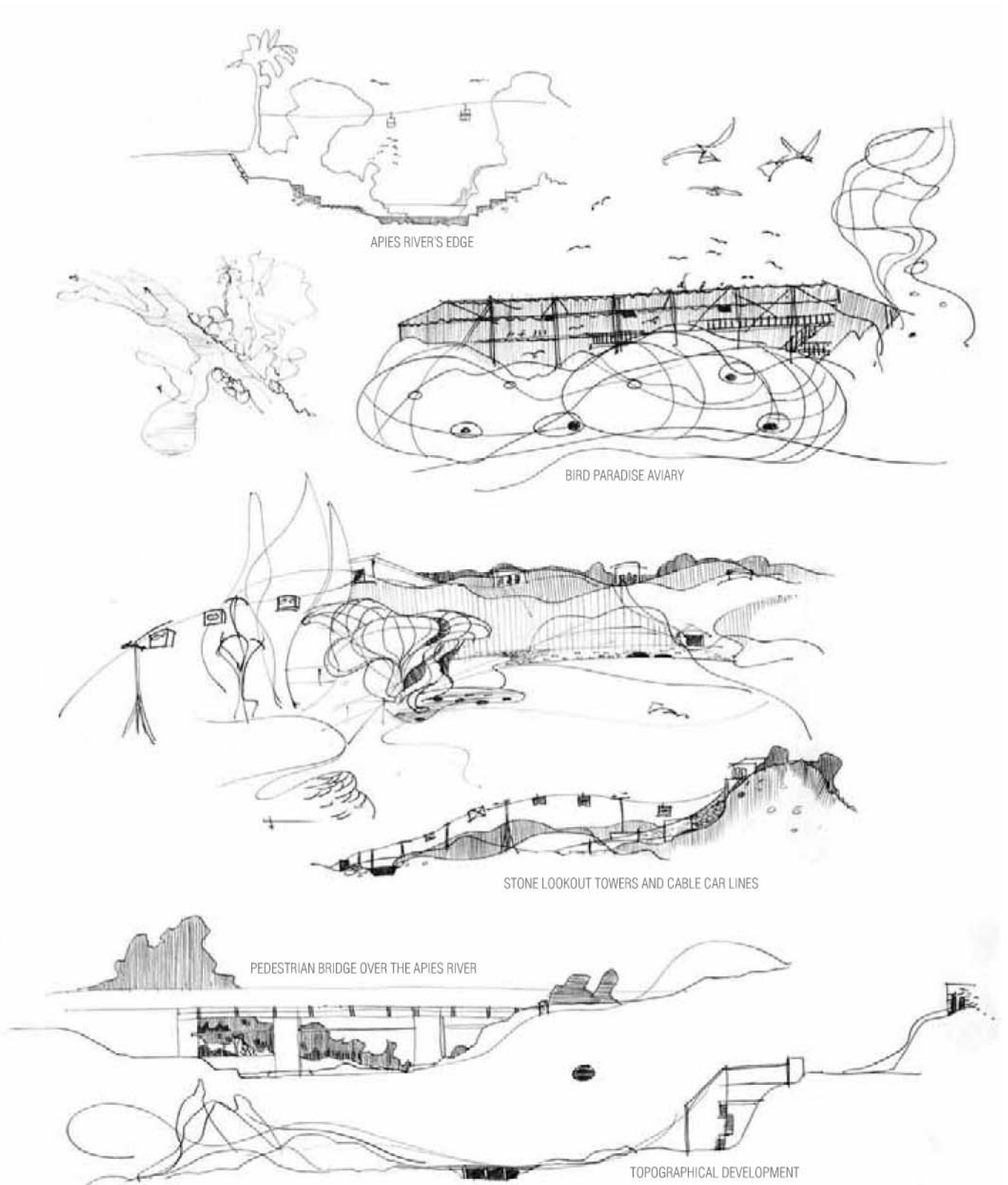
LION CAGE 1902



BEAR HOUSE 1911



ELEPHANT HOUSE

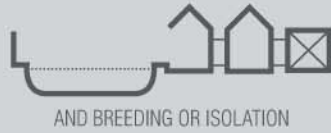


IMG 061: Study of the topography of NZG, creating a feel for the landscape

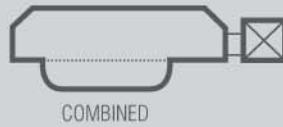
OPEN EXHIBITS



POOL EXHIBITS



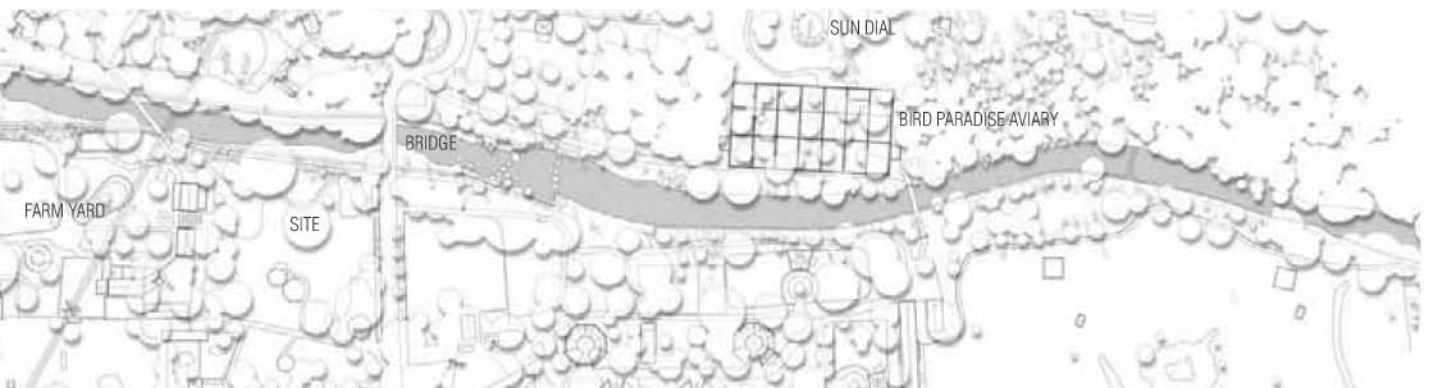
ENCLOSED EXHIBITS



SPECIALISED EXHIBITS



IMG 062: Enclosure types within NZG as sectional diagrams



IMG 063: Section of NZG site plan with full length of Apies river within the site and indication of the density of existing trees along the river

4.4 VISITOR EXPERIENCE

The zoo visitor has a tendency to spend a relatively short time at any one exhibit and is constantly urged onward by anticipating more novel experiences. Through consideration of the approach to an exhibit, and the sequence of preceding experiences the design is able to build a high level of anticipation. Visitors rely on all senses for opportunities to identify themselves with the animal, hence the need for participatory or 'hands on' exhibits. This need for active comparative identification can be exploited in conveying conservation and cultural messages.

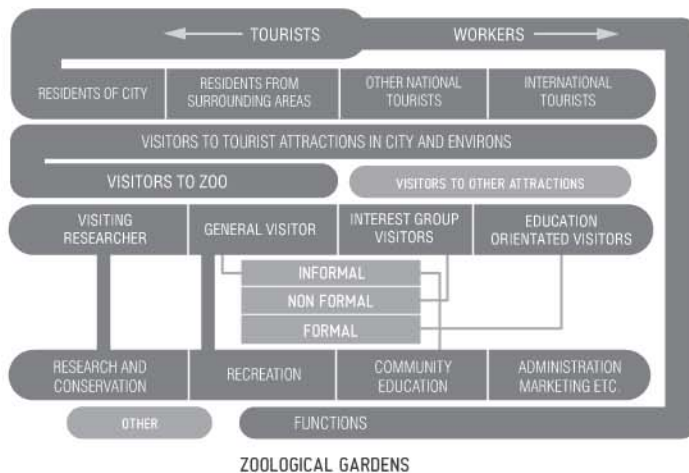
The design approach requires innovative ways for the visitor to interact with the animal and its environment. Eye-level contact with the animal on its own turf develops a sense of respect and understanding for the animal and its

habitat. The provision of facilities for zoo keepers as part of the visitor centre should add further meaning to the experience.

The level of the visitor's interaction with the environment influences the creation of the mental image and exhibit design employs a variety of techniques to enhance this image. The setting, mood, and introduction to an exhibit can be orientated toward affecting the emotions of the viewers. *The viewers must be encouraged to experience the zoo beyond the mere level of reacting to physical sensations (e.g. loud noise, abrupt movement, odours). They must be enticed to interact at a perceptual level, where strong mental images are formed through the processing and organization of all the sensations that they experience. The goal is thus to produce an intellectual reaction that can reinforce and contribute to the visitor's total learning experience (Dry & Joubert, 1991).*



PEOPLE



ZOOLOGICAL GARDENS

4.5 ANIMAL HABITAT GUIDELINES

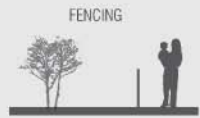
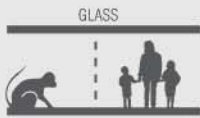
Zoo exhibit design is in a development phase that includes thematic display, replication of the animal's natural habitat, mixed species exhibits, ecological themes, and behavioural engineering. A non-argument exists regarding the type of preferred exhibit (naturalistic or abstract). Whether the environment within the exhibit is artificial or not doesn't seem to make a difference to animal behaviour, but visitors' reactions vary substantially.

Replication of the environment, which can often be less expensive to build and maintain than traditional exhibits, is not always possible or desirable. Fortunately, alternative design approaches are constantly being investigated. Continual experimentation with exhibit techniques is a necessary activity for keepers and through inventive architectural intervention a framework could be created to accommodate such efforts.

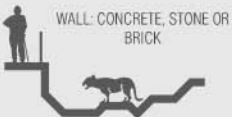
IMG 064: above: Visitor interface of NZG

IMG 065: right: Boundary conditions and barriers in NZG
opposite: Barrier and viewing platform compositions within zoos

HUMAN TO ANIMAL/BARRIER



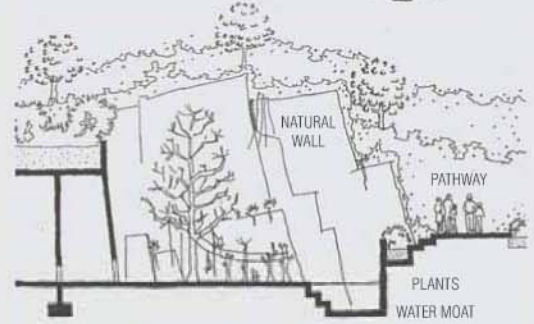
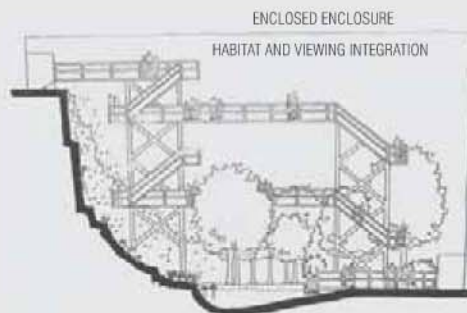
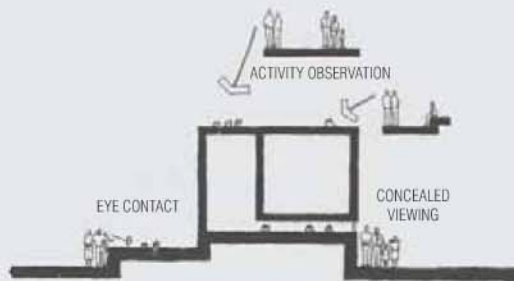
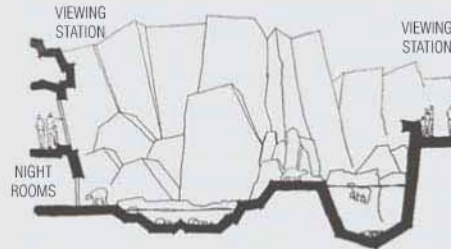
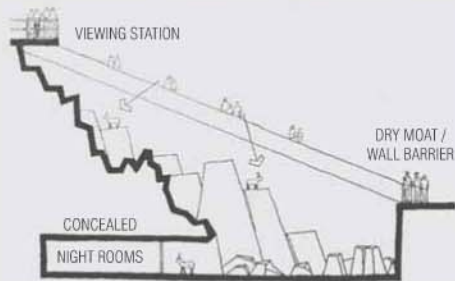
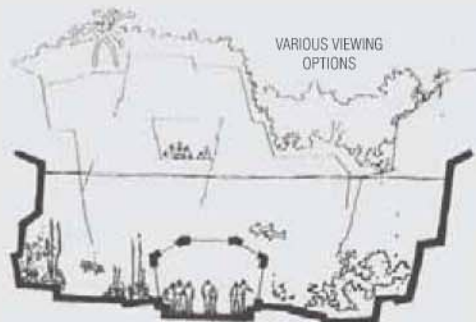
HUMAN TO BARRIER /WARNING

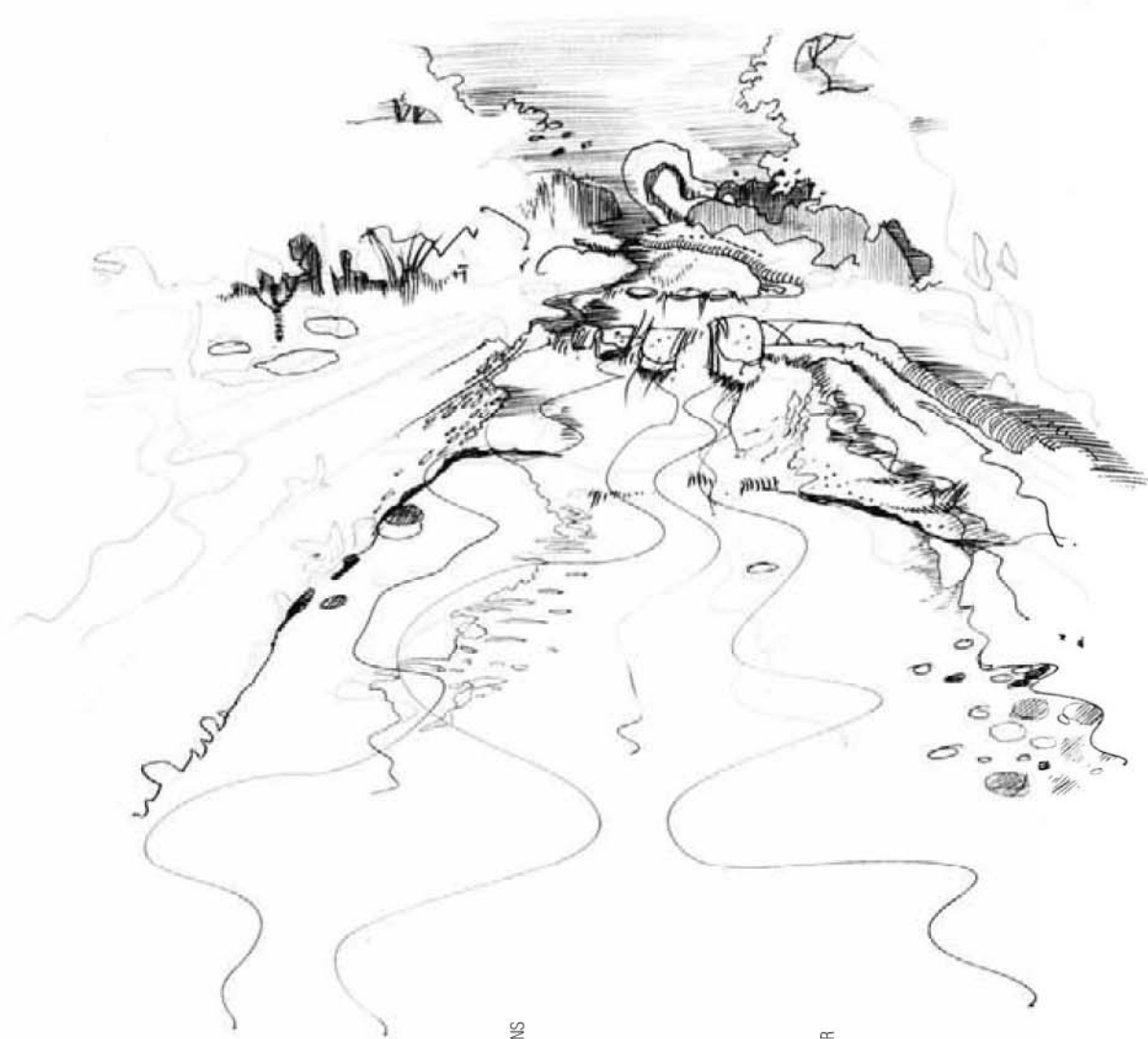


WALL: CONCRETE, STONE OR BRICK



ANIMAL TO ANIMAL/DIVIDER





STEPS TO PICNIC LEVEL

ELEPHANT INDABA VENUE

LAR-GIBBON EXHIBITION

PICNIC TERRAIN LAWN

FARM YARD

ENTRANCE TO FARMYARD

PLATFORM FOR DEMONSTRATIONS
& RECREATION

PICNIC BENCH FURNITURE

HIPPO POOLS ACROSS THE RIVER

APIES RIVER

WITSTINKHOUT TREE

PEDESTRIAN BRIDGE



IMG 066: Distorted panoramic image of site on existing picnic terrain next to the Apies river

IMG 067: top: Upstream view of the Apies river

4.6 PROGRAMME

The 1991 Master plan indicated the need for a new sophisticated educational facility to replace the Frank Brand Education Centre; and recommended that such a facility ideally hold an auditorium including smaller workshop and demonstration spaces. The South African Agency for Science and Technology Advancement (SAASTA) is assisting the planning and development of a Life Science Centre in NZG. Through SAASTA's support there are new plans to establish such a centre in the historic Museum building which will need to be fully restored according to heritage requirements. (IMG 060) SAASTA's envisions that the Centre will *serve as a focal point for the science education, awareness and outreach programmes of the NZG and provide a unique science experience for visitors, also involving the inhabitants of the zoo* (SAASTA, 2011).

However, the ZOO situation invites an innovative way of combining the physical and virtual world (simulation) producing a rounded and enhanced learning environment as program incorporating all aspects of NZG's mission statement into a single visitors centre or structures.

Younger learners need to be engaged in learning that is relevant to their context; this includes active learning as well as inspirational material. If architecture is to produce effective environments for play and education they must be in tune with the contemporary culture of childhood (allegedly technological). The medium of film (simulation) could make science attractive and accessible,

inspiring and motivational. Visual, Auditory and active learning are all aspects that border on and can exploit ZOO as simulated environment; teaching the fiction within ZOO along with the fact of the situation.

By juxtaposing the real experience with the inspirational medium of film within one visitors centre the building will honestly communicate the possibility that authenticity is a negotiated rather than a fixed attribute. It is important to note the possibility of communicating the layering of enclosure and escapism within such a centre. Even when visitors do not read any signs they will probably unconsciously make the right connection between an animal and its habitat, just from what they experience (Fiby, 2008). Storylines in films, literature or themed attractions create a context or rational for the overall visitor experience and a guide for the sequencing or choreography of the component experiences (Coe, 2011). The addition of a domed theatre and climbing tower or view tower as new enclosure typologies for both man and animal should motivate zoo visits and increase the level of satisfaction.

The proposed Visitors Centre could house an auditorium; exhibition, installation and workshop space; a climbing structure as part of a small primate exhibit, and research and analysis space for the primate's keepers or handlers. The incorporation of the keeper's facilities should aid in guarding against the zoo becoming a living

museum, by conveying the real workings of the zoo.

The programmes will be of a multi-functional or spatially robust nature to accommodate the overlapping of programs. The author still believes that programming belongs to the observation and subsequently the cognitive projection of the beholder. It is assumed that visitors continuously programme structures as they read new meanings into the narratives created through the environment and the metaphors of abstracted form.

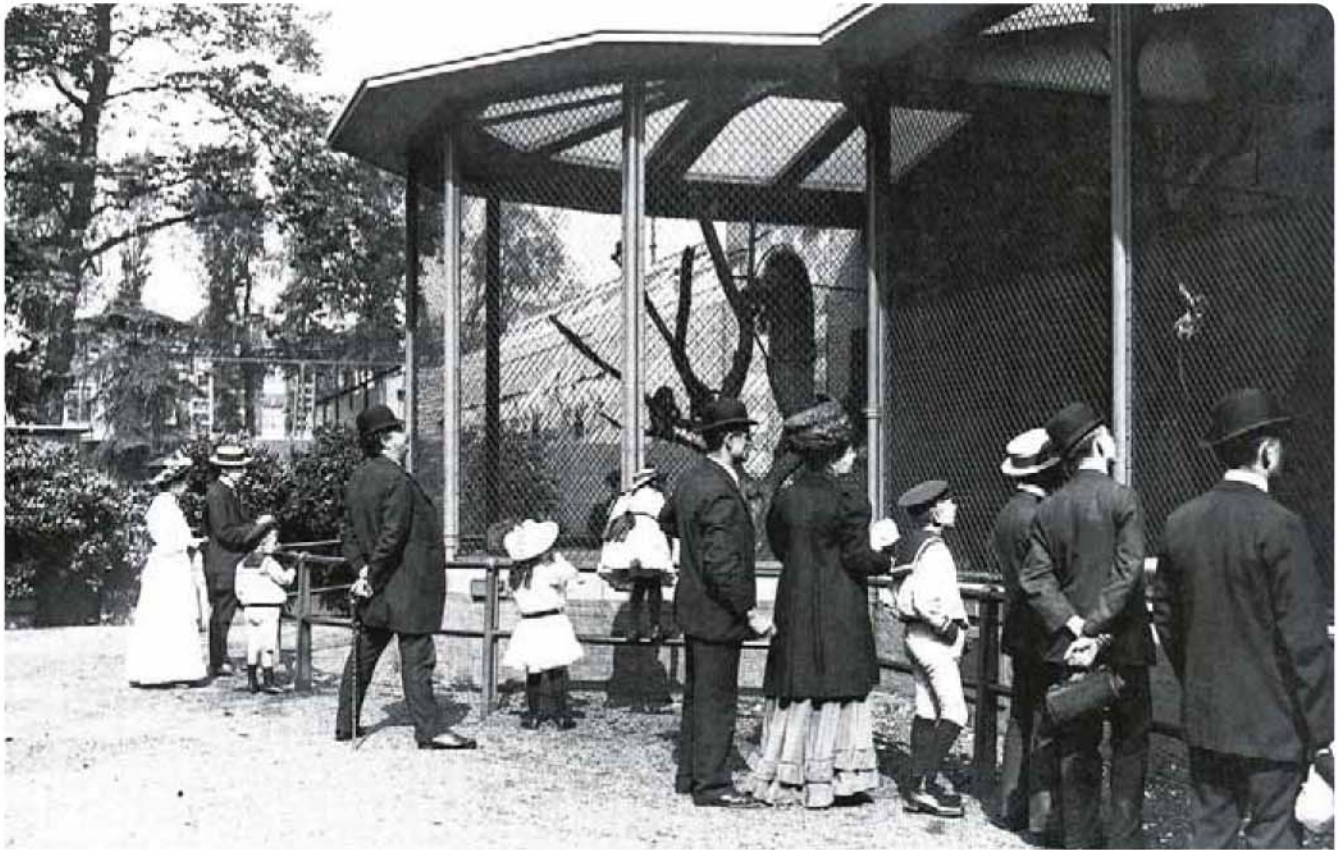
4.7 DELIMITATIONS

4.7.1 Although the proposal briefly reflects on the outcomes of Volume 1 and Volume 3 (Master plan extensions) of The Master Plan for NZG by Dry & Joubert (1991) and Dry Mokoena & Partners (1997) respectively; the design development will not be based solely within the guidelines set in these documents.

4.7.2 The technical specification in developing a healthy environment for animal species is beyond the scope of this dissertation and in practise requires the expertise of a specialised collaborative design team. Design principles and recommendations are included to indicate an understanding of the elementary design criteria when designing for small primates.



IMG 068: A ride in the cable car that escapes the surface of the site, one of the few vertically inclined instances in NZG



IMG 069: Visiting the monkey cages

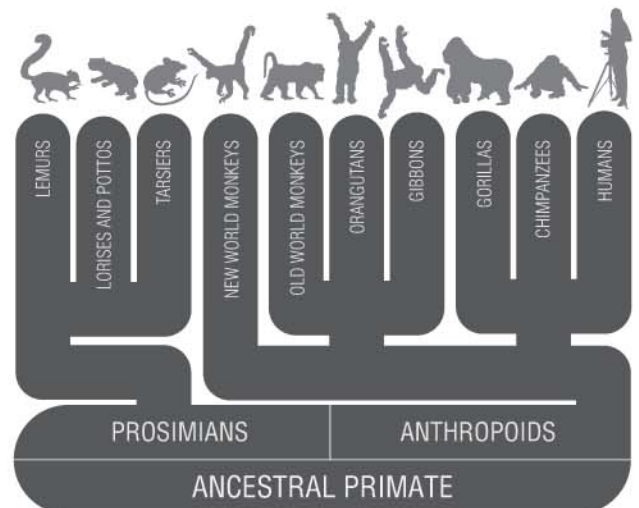
<p>SIMPLE DIRECT OBSERVATION PASSIVE VISITOR OVERSTIMULATED BY AUDIO-VISUAL > CASUAL OUTING > NOT ANXIOUS TO GET INVOLVED</p>	<p>MULTI SENSORY EXPERIENCES EXHIBIT ATTRACTS ATTENTION AND PROVOKES QUESTIONING > FURTHER DISCOVERY AND LEARNING VISITOR'S SENSES COMPARED TO SIMILAR SENSES OF THE ANIMAL</p>	<p>VIDEO POSSIBLE MAJOR LEISURE ACTIVITY > ZOOS IMPACTED GOOD & BAD BY PHENOMENON > COMPETITOR FOR RECREATIONAL ACTIVITIES (BAD) > AS MARKETING TOOL & IMMERSIVE TOOL (GOOD) UNDERUTILIZED</p>
<p>INTERPRETATION VISITORS FORGET WHAT IS HEARD OR READ – FOCUS IS PLACED ON WHAT VISITORS SEE & DO > MATTERS DIRECTED INTO DISCUSSION</p>	<p>PARTICIPATORY EXHIBITS VISITOR INVOLVED > CLEARER UNDERSTANDING OF SUBJECT > VISITOR ENACTS ANIMALS NATURAL BEHAVIOUR</p>	<p><i>"Anyone who doesn't understand the relationship between entertainment and education doesn't know much about either."</i> (Marshall McLuhan)</p>

IMG 070: Types of visitor's and interaction styles

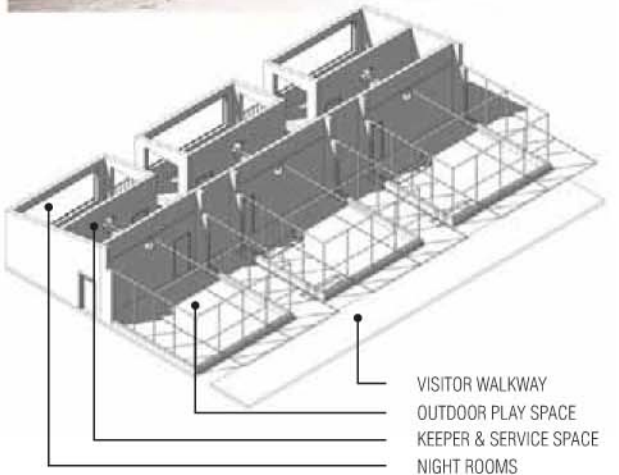


Possible rotation of smaller primates within NZG. Random rotation through various exhibitions decrease stress levels and increase activity and previously unseen natural behaviors (Coe, 2004).

IMG 071: Rotation of primates through exhibitions



IMG 072: Focussed section of the development of man from animal



IMG 073: Study of existing primate enclosures and service spaces