

BRIEFING DOCUMENT



“The actions of mankind threaten to destroy perhaps half of the species that now inhabit it within the next few decades. These species will not be lost because of poachers or overhunting, but because of the destruction of habitat - the end result of overpopulation and inadequate land-management policies.”

Landscape architecture (1997:98)

An increasing global population causes cities to expand constantly and metropolitan areas to penetrate into natural habitats. This intrusion into ecosystems diminishes natural sites in which wildlife species can prosper. Depletion of food sources and breeding ground is one of the main reasons for the depletion of wildlife. Driven from their dwellings by invasive human settlement, species are forced to look for new 'home range'<sup>1</sup> in decreasing natural habitation. Wildlife that has managed to adapt to urban environments struggle with the threat of injury or fatality associated with human encounter.

There is an apparent need for increased awareness in, and education of, people about wildlife and the elimination of misconceptions that surround certain species. Global focus is shifting towards conservation and sustainable approaches. Facilities such as wildlife centres are beneficial to wildlife and the global community since they educate the public, and contribute to the rehabilitation, breeding and research of animals and birds.

#### abstract - CLIENT

The University of Pretoria is developing a Wildlife Research and Rehabilitation Centre on University property. The Facility strives towards becoming an institute of excellence and higher learning with educational facilities for academic research and practical training. The University will receive financial support and medical supplies from a pharmaceutical company in exchange for research on final phase drug testing and use of the facility. Additional monetary sourcing such as sub-contracting and sponsorships are to be explored.

The establishment of the Facility answers the growing need for a practical training centre for students, who study in the fields of wildlife and conservation, and allows staff members to expand their practical contribution to their fields of work. The Facility will be a fully functioning wildlife treatment, care and rehabilitation facility contributing to nature conservation and the community by establishing itself as a centre for public education and awareness, and as a job creation endeavour. The University sees the project as an investment and possible income generator while receiving international recognition from scientific and educational bodies.

#### a legal context - CONTRACTUAL AGREEMENT

Contracting is done through *Research and Contracting, University of Pretoria*. A University of Pretoria standard contract is used and adjusted according to terms and conditions agreed upon by both parties (Rita Snyders, Contract Administrator: Personal Interview). An extract from a standard University of Pretoria contractual agreement, adapted for the contracting of an outside company for the involvement in the Wildlife Research and Rehabilitation Project, can be referred to in Appendix A (p.094).

#### (Footnotes)

<sup>1</sup> Home range is a big area utilized by an animal or bird on an annual basis if not migratory (Landscape Architecture 1997:92).



Fig. 01 - Serval



Existing wildlife centres and treatment facilities are in most cases ill-equipped and under funded. Most are non-profit organisations that largely depend on the backing of the community and generosity of sponsors, although the lack of public knowledge and awareness in this field is one of the biggest problems and reasons for insufficient support. There has been little opportunity for detailed design development of wildlife centres from conception with regard to their specific needs and inherent potential. The chance to design a full-fledged wildlife facility from inception can uncover previously unexplored possibilities and opportunities.

People in urban areas come into contact with wildlife everyday, although often oblivious to this fact. The everyday exposure and firsthand experience of wildlife makes 'metropolitan wildlife' a suitable starting point for creating community awareness and encouraging conservation.

#### design of a wildlife research and rehabilitation facility - PROJECT BRIEF

Design and develop a research and rehabilitation facility for wildlife as per request of the University of Pretoria. The Facility is to be developed on University property and is a centre for students in theoretical and practical training. It is envisaged as a treatment and care facility for injured, orphaned and endangered wildlife species, and will work primarily with wildlife caught up in Metropolitan expansion and in need of assistance. A rehabilitation and breeding program is to be established with related research and documentation. A visitor's centre will establish interaction with the public by educating and creating awareness. There will be fund generation through possible inclusion of recreational facilities.

#### FACILITIES AND SERVICES

The following essential and suggested facilities and services are to be researched and considered to fulfil the needs of the centre:

##### RESEARCH

Research is to be carried out by staff and students. Laboratories and areas for documentation and storage of data are required. These facilities are to be made available for use by personnel of the involved Pharmaceutical Company.

##### REHABILITATION AND BREEDING

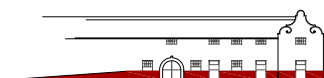
Facilities to be appropriately designed for use in activities transpiring in breeding and rehabilitation programs. The Facility should accommodate animals and reptiles, sizes small to medium and birds. Needs of nocturnal creatures are to be considered as opposed to the needs of those that are diurnal. A hospital is to be developed with a surgical area and an intensive care unit. A quarantine area is needed and storage for all necessary equipment and supplies. Produce storage and preparation kitchen to be included.

##### STUDENT TRAINING AND EDUCATION

Provision for an indoor lecture area for theoretical classes and training preparation. A storage area/locker room for secure placement and storage of staff and student personal belongings while at the Centre and workstations or communal areas where theoretical work can be carried out need to be considered.



Fig. 02 - Vervet Monkey



## PUBLIC SECTOR AND FUND GENERATION

With a focus on encouraging public awareness and education an informative exhibition, the inclusion of facilities such as a seminar room or auditorium for lectures and video viewing, could facilitate intended community project educational programs. These are to be made available to schools, corporations, interest groups, clubs, local communities and individuals. The programs and possible interactive tours through the facility can be used for fund generation along with the possible inclusion of a picnic area, petting zoo, outsourced coffee shop or restaurant and souvenir shop.

## BASIC SERVICES AND FACILITIES

The Facility is to accommodate various working areas related to the provision of care for wildlife, and laboratories for related research. Educational venues are required for lectures and theory workshops for both students and the public. A visitor's centre should entertain and inform members of the public and should include an educational exhibition. Outside activities and wildlife interaction for young and adult visitors need to be designed, considering site layout and placement of wildlife holdings. Offices are required for administration and facility management, and the inclusion of a venue for food and beverages. Accessibility to kitchens or refreshment stations and areas of social interaction and relaxation are of importance to staff and students. Sufficient sanitary facilities and parking with consideration to all users and specific needs is pertinent (refer to accommodation schedule p.102).

## COMMERCIALISING AND ADVERTISING

Development of a public image for the facility and visitor's centre is necessary, through architectural and design approach, and recognisable imagery and signage.

## selection - SITE

The choice of site greatly influences development possibilities and design potential. Selection criteria for the identification of a suitable site include:

The site needs to be on property currently owned by the University of Pretoria.

A brownfield site with any kind of pre-existing structure, suitable for refurbishment and development with possible addition to and expansion of the existing structure.

Large open segments of land situated within a suburban area, between the central business district and rural development where natural and man-made worlds meet.

A site easily accessible to staff and students as well as public visitors, close to main access routes.

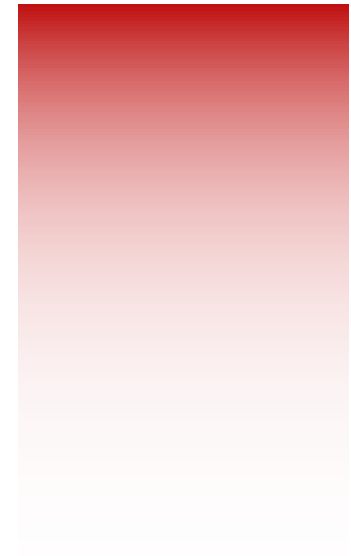
Preferable visual access to the site from roads to create public awareness of the facility, establishing a visual node.



Fig. 03 - Education Centre at Hoedspruit Cheetah Project



CONTEXT STUDY



The study researches the context in which the project will be developed, establishing a framework within which design decisions can be made, reacting contextually for or against.

## University of Pretoria – CLIENT

involved parties – UNIVERSITY OF PRETORIA

In the study of wildlife, first hand experience is an irreplaceable educational tool and related departments have similar needs and requirements. Unnecessary segregation has caused the University to look at uniting some of these departments (Haupt, Lecturer at the Department of Zoology: Personal Interview). The Wildlife Research and Rehabilitation Facility is a resource that provides the opportunity for different fields of study to work together, combine efforts and share equipment and facilities. The following faculties and departments are sectors of the University of Pretoria that will be involved in the Facility. The diverse disciplines all have distinctive spheres of expertise to offer the project, which will ensure a specialist facility.

### FACULTY OF NATURAL AND AGRICULTURAL SCIENCES

#### DEPARTMENT OF ZOOLOGY

The *Zoology department* is based on the University main campus. Limited funding and large travelling distances to suitable facilities make exposing students to practical training and theory application difficult. According to Martin Haupt, a departmental lecturer, there is a recognized need for more practical exposure, and the development of a training facility in close proximity would ensure continuous Zoology involvement.

#### DEPARTMENT OF ANIMAL AND WILDLIFE SCIENCES – *Centre for Wildlife Management*

The importance of effective wildlife management has grown over the past few years, both locally and internationally according to the Centre for Wildlife Management. The Centre facilitates postgraduate University degrees in Wildlife Management, and is situated on the University of Pretoria Experimental Farm grounds. Course research includes topics such as wildlife ecology and wildlife management, habitat management and vegetation studies, individual wildlife species, and predator ecology and herbivore nutrition. Students spend large amounts of time on practical projects (University of Pretoria, Centre for Wildlife Management pamphlet).

The Centre for Wildlife Management is the force behind the EcoWorld project. EcoWorld aims to provide a platform for discussing wildlife and ecotourism issues and subjects concerning wildlife management (University of Pretoria, Centre for Wildlife Management pamphlet).

### FACULTY OF VETERINARY SCIENCE

The University of Pretoria's Faculty of Veterinary Science is situated on a satellite campus at Onderstepoort. Departments in the Faculty of Veterinary Science focus mainly on livestock and domestic animals, although several sub-divisions deal with wildlife and cover a range of topics such as parasitology, infectious diseases, pharmacology, toxicology, radiology, anatomy and reproduction.



Fig. 04 - Centre for Wildlife Management, Experimental Farm



## DEPARTMENT OF ANATOMY AND PHYSIOLOGY

The main focus of research in Anatomy at the *Department of Anatomy and Physiology*, is on the anatomy of wild animals and the reproductive biology of birds and mammals.

## DEPARTMENT OF PARACLINICAL SCIENCES

The *Department of Paraclinical Sciences* has selected several key areas of interdisciplinary research of local and international relevance. Research includes surveillance, monitoring and control of diseases and management of wildlife, as well as the conduct of pharmacological studies and use of veterinary medicines on wildlife.

## DEPARTMENT OF VETERINARY TROPICAL DISEASES

The *Department of Veterinary Tropical Diseases* focuses on defining disease problems, developing and applying innovative and appropriate methods to diagnose, prevent and control or eradicate infectious and parasitic diseases. Research includes diseases that arise as a result of environmental and human factors that manifest at the wildlife/domestic animal interface and fieldwork is an integral component.

## VETERINARY WILDLIFE UNIT

The Faculty of Veterinary Science supports a *Veterinary Wildlife Unit* specialising in the fields of ecophysiology, capture physiology and pharmacology. Studies include the measurement of stress and stress related diseases, diseases of captive carnivores; reproduction, contraception and fertility control in wildlife.

## VETERINARY ACADEMIC HOSPITAL

Onderstepoort Veterinary Academic Hospital provides mobile and rural clinic services as part of the a teaching mission in which the students are involved.

There are postgraduate courses that deal with wildlife but students are forced to make use of wildlife centres outside of the University. According to Professor Bertschinger, head of the Department of Reproduction (*Personal Interview*), the Faculty is looking at expanding on the existing courses and including pre-graduate courses. Bertschinger voiced a rising need for more practical facilities in this field. Research networking encourages local and international final year veterinary students to do their clinic practical at Onderstepoort. The demand is very high and an additional clinic will allow for acceptance of more students throughout the year, offering the chance to work exclusively with wildlife.

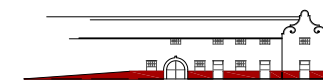
SOURCE: University of Pretoria, Faculty of Veterinary Science Web page



Fig. 05 - Faculty of Veterinary Science, Onderstepoort

The intention of the Wildlife Research and Rehabilitation Facility is to make effective use of available expertise. Staff and students conduct research while practical training provides for the needs of the wildlife and demands of the facility. Educational tours and lectures could be offered to the public by Faculty staff, as extension to community contribution projects.

Direct contact with the EcoWorld project will keep the Research and Rehabilitation Facility up to date on relevant issues while creating opportunities to build contacts with related organisation. The Facility will in future be automatically represented at important functions and congresses attended by the Faculty of Veterinary Science, creating opportunities for participation and the prospect of becoming pro-active on a large scale.



surrounding facilities – **ANIMAL CARE**

## facilities in Gauteng - WILDLIFE

Most Facilities that work with wildlife are situated on the outskirts of towns and cities or in rural areas. Except for zoos, which are often located near the city centre, restricted access, lack of accessibility and long distances limit the contact of the general population with these facilities. Removed from public view with minimal exposure, people are often unaware of the existence of most of these centres.

There are three known wildlife centres or facilities in Gauteng: ART- Animal Rescue Team, Johannesburg; Free Me, Johannesburg and Wildcare Africa, Pretoria. Wildcare Africa - wildlife rehabilitation centre and intensive care unit, is situated at Kameeldrift and is the biggest and most developed of the centres. Wildcare is one of the most well known and well funded of South Africa's wildlife centres.

It is important for the Animal Research and Rehabilitation Facility to develop working relationships with the existing centres in order to establish a support system

## veterinarians and veterinary clinics - DOMESTIC

Ignorant to the existence and whereabouts of wildlife rehabilitation facilities, members of the community who come across injured wild animals or birds in need of medical attention commonly take the creature to the closest veterinarian for assistance. Veterinarians, often ill equipped and uneducated in working with wildlife, are unable to help.

Forming relationships with veterinarians and animal clinics within Gauteng will allow these facilities to refer any wildlife cases straight to the Wildlife Research and Rehabilitation Facility. The Facility can be contacted for referral to other nearby centres or to fetch the animal or bird.

**physical location - SITE**

The selected site is on the Research Farm of the University of Pretoria (For site identification refer to Appendix A p.094). A 4-acre piece of land has been set-aside with possible development outside its borders. The site is currently zoned as educational land and suited for the development of an educational centre (City of Tshwane Metropolitan Municipality).

The Research farm is located in the suburb of Hatfield, Pretoria East, Gauteng Province, South Africa

The Geographical coordinates are: 25° 45' S Latitude

28° 16' E Longitude

(South African weather service)



Fig. 06 - Wildlife cages at ART





SITE CHOICE

The site chosen for the placement of the Wildlife Research and Rehabilitation Facility is the land surrounding and including the current Milking Unit and management of large livestock. The established area is on the western side of the Experimental Farm grounds (Fig.07).

There are open fields and several existing structures on the selected area of land. The largest and main structure on the site is a farm-style building designed for the administration of large livestock and housing of both horses and cattle. The building includes horse and cattle stables, storage space, sleeping quarters and a functioning milking unit. Three loose-standing rectangular buildings line up with two silos right behind the main building, and house an office, laboratory space and calf pens. Surrounding this focal point there is also an open cattle shed, a large storage shed, concrete storage basins, another similar silo structure, a small concrete pavilion and stone cattle holdings (Fig.08).

The open fields surrounding these facilities are fenced off and used for cattle holding and grazing. Only an estimated 20% of the mentioned structures are in use with most quarters empty and no longer operational. Functioning areas include the milking unit, an office and the sleeping quarters. All stables are deserted with cattle only occupying the open shed and calf pens.

Gravel roads link most of the structures. There is little established parking on or near the site, with only small paved areas around the main building and a 3-car carport next to it.



Fig. 07 - Map of Experimental farm and site

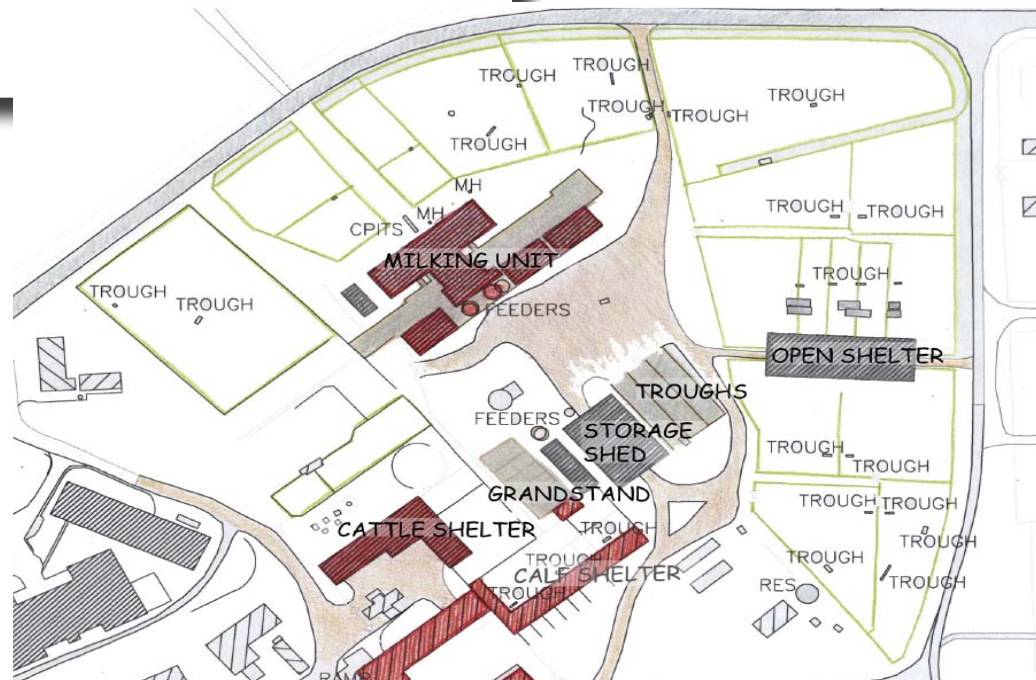


Fig. 08 - Plan view of site and surrounding structures

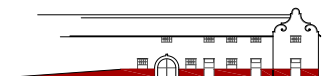




Fig. 09 - Aerial view of site and surrounding facilities

SURROUNDING FACILITIES

All buildings on the Farm of direct significance to the new Facility are in close proximity. The selected site is situated within 300m of the western entrance of the Farm and approached by the main access road that passes in front of it. Access is also possible by a secondary road that runs around the back of the site. Just west of the site is the Administration building and the Centre for Wildlife Management, situated between the entrance and the site (Fig.09).

Experimental Farm within Pretoria - LOCATION

SITE ACCESS

The Experimental Farm borders on the University of Pretoria Sports Grounds, and the west entrance to the farm is accessed through the sports grounds via South Street (Fig.10). University Security regulates access to the sports grounds and Experimental Farm by means of security booms.

UNIVERSITY MAIN CAMPUS

The site is situated to the East of the University, approximately 2.5km from the University of Pretoria main campus entrance (Fig.11). The Farm is in close proximity to the University main campus, and thus close to the Department of Zoology which is situated on main campus grounds.

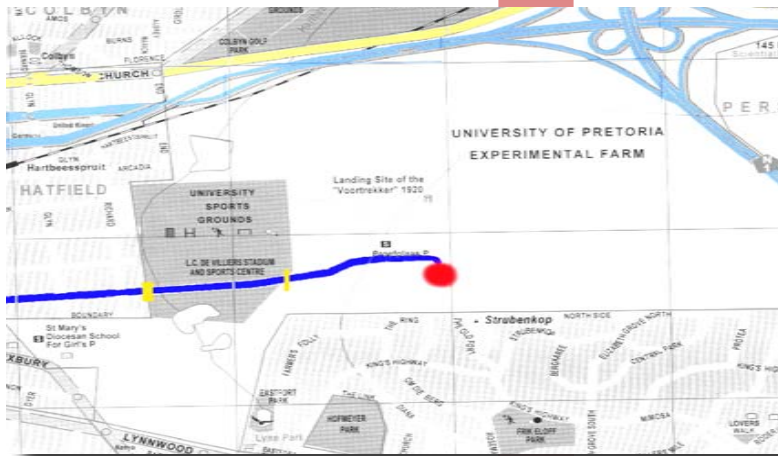


Fig. 10 - Access to site through sports grounds via South street

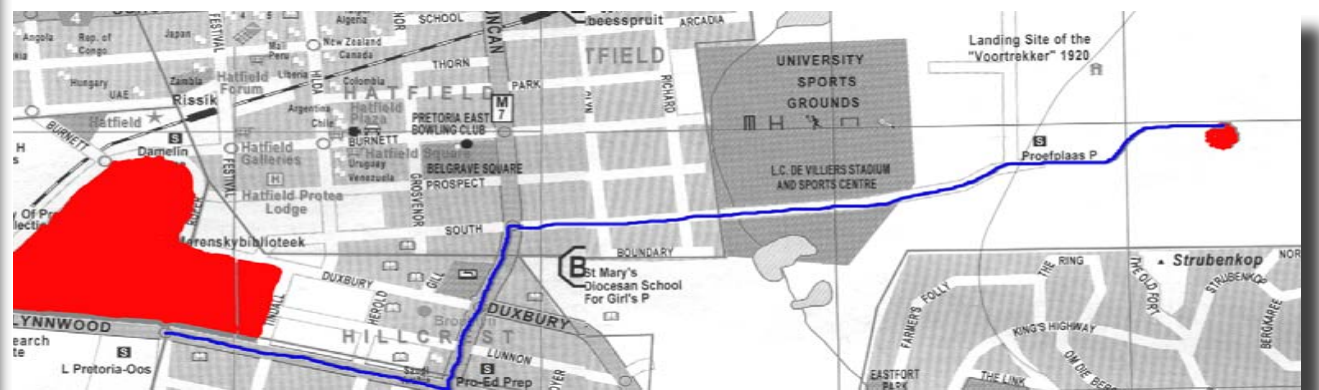


Fig. 11 - Proximity of the site to U.P. main campus



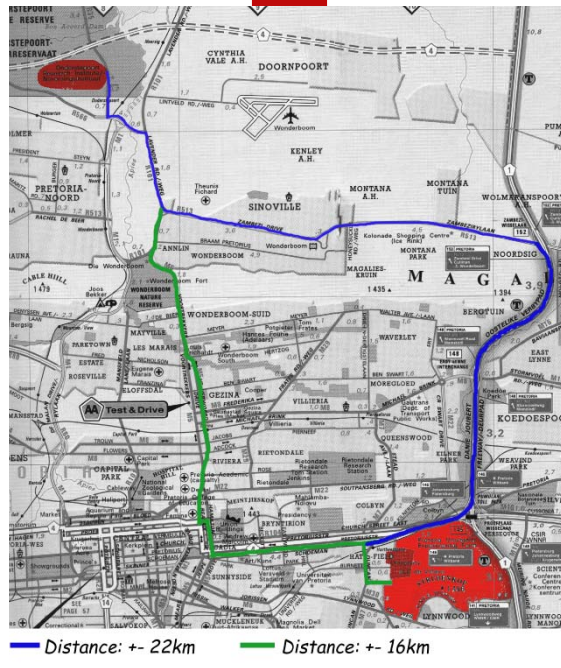


Fig. 12 - Access between Onderstepoort and the Experimental Farm

ONDERSTEPOORT

Onderstepoort is situated northwest of the Experimental Farm, approximately 20km by road and approximately 30 minutes by car. Two main routes linking the two campuses, one passing through Pretoria central, and the other making use of the N1 South highway (Fig.12).

CLIMATE

Pretoria has a very warm, dry climate. Hot summer temperatures reach a maximum temperature range between 27 and 29 degrees Celsius and a minimum temperature range between 16 to 18 degrees Celsius. Winters are rather moderate with maximum temperatures between 19 and 22 degrees, dropping to a minimum range between 5 and 8 degrees Celsius.

Thunderstorms bring a summer rainfall with a precipitation average in January of 136mm per month, which drops in winter to its lowest average of 3mm per month in July. Wind direction is predominantly north-east.

Climatic conditions are pertinent with regard to the needs of the wildlife and greatly influence design requirements of the wildlife holdings. Climatic conditions affect design approaches towards human comfort within buildings and building use.

SOURCE: South African weather Service

University of Pretoria Research Farm - SITE

Historical Background - RESEARCH FARM



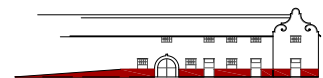
Fig. 13 and 14 - Early 20th century views of the old stables on the Experimental Farm

The Hatfield Experimental Farm is the property of the University of Pretoria and is the result of years of discussion and negotiation, which culminated in its realization in 1920, and the completion of most of the buildings by 1925 (Fig.13 & Fig.14).

The Hatfield experimental Farm is a very valuable property and a scientifically unique national asset. There has been pressure applied over the years to use the land for other purposes due to its prime location. Land has been lost to various developments in the process, including the CSIR, National Botanical gardens, Christian Brother’s College, the N4 and N1 highways, and Persegor Park - part of which has been sold for private enterprise. The University also used Experimental Farm land for establishing the University sports grounds and related facilities, as well as the men’s hostel. The Experimental Farm has shrunk significantly to 270 hectares since it’s founding (Tukkievaria 2000: 4).



The farm generates approximately two-thirds of its own financial capacity, with the University only having to provide around one-third of its total funding as confirmed by the Experimental Farm manager Roelf Coertze (Personal interview).



The Hatfield Experimental Farm is home to a very active scientific and research community. It is solely used for research and academic purposes and the farm's educational value is increased through its close proximity to the Pretoria University main campus. The University strives to compete on a national and international level and this can be seen in the amount of projects the Farm undertakes (Tukkievaria 2000: 4). According to Mr. Coertze, approximately 250 projects are presently being run at the Farm.

"We believe this project will spur the next wave of knowledge-intensive industries in the country."

- Blue IQ CEO Pradeep Maharaj  
([www.itweb.co.za](http://www.itweb.co.za))

The Innovation Hub is a Blue IQ, smart industry development project aimed at developing Tshwane as the intellectual capital of the country and Gauteng as the "smart" province. The Hub is envisioned as a Science and Technology Park, and as stated by Gauteng premier Mbhazima Shilowa, aims to create a place where education, research, businesses, hi-tech entrepreneurs, and venture capital would work and meet to enhance the innovative capacity and economic development of the province (Whitford: [www.itweb.co.za](http://www.itweb.co.za)). Innovation Hub CEO Neville Comins believes the project "would help keep talent in SA by providing an environment in which skilled and talented people could build businesses that could compete globally" (Whitford: [www.itweb.co.za](http://www.itweb.co.za)).

This R300 million initiative is a joint venture between the Gauteng provincial government and SERA with an alliance established between the University of Pretoria and the CSIR. The Gauteng Development Facilitation Act Tribunal approved the University of Pretoria's application to establish the Innovation Hub's main centre on a part of its Experimental Farm, on a "knowledge axis" between the University of Pretoria and the CSIR ([www.theinnovationhub.com](http://www.theinnovationhub.com)). The Hub is ideally positioned to attract foreign research and development companies, and develop a significant R&D outsourcing industry, according to Blue IQ CEO Pradeep Maharaj. The Principal of the University of Pretoria, Calie Pistorius, welcomes the development and says that it will benefit both the local community and civil society at large ([www.itweb.co.za](http://www.itweb.co.za)). Post-graduate students, mainly from the University of Pretoria, are to be recruited by Epiuse and exposed to company-related projects, giving them market exposure and creating opportunity for the employment of some of the students (Whitford: [www.itweb.co.za](http://www.itweb.co.za)).

The development philosophy, according to 'The Innovation Hub' - [www.theinnovationhub.com](http://www.theinnovationhub.com), aims to "increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions." Design, construction and operation have drawn on international best practices, taking into account local economic, social, and environmental context. Location, design and management stimulate cross-fertilisation of ideas and the flow of knowledge that comes with innovation and dynamic social interaction. The environment is responsive to the lifestyle preferences of today's knowledge workers and a high-tech cluster will accommodate the changing needs of new businesses and education, research and incubation practices.

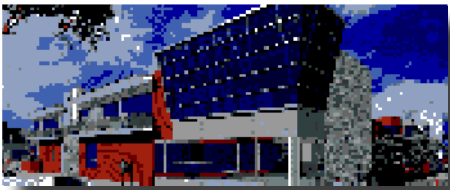


Fig. 15 - Innovation Hub impression



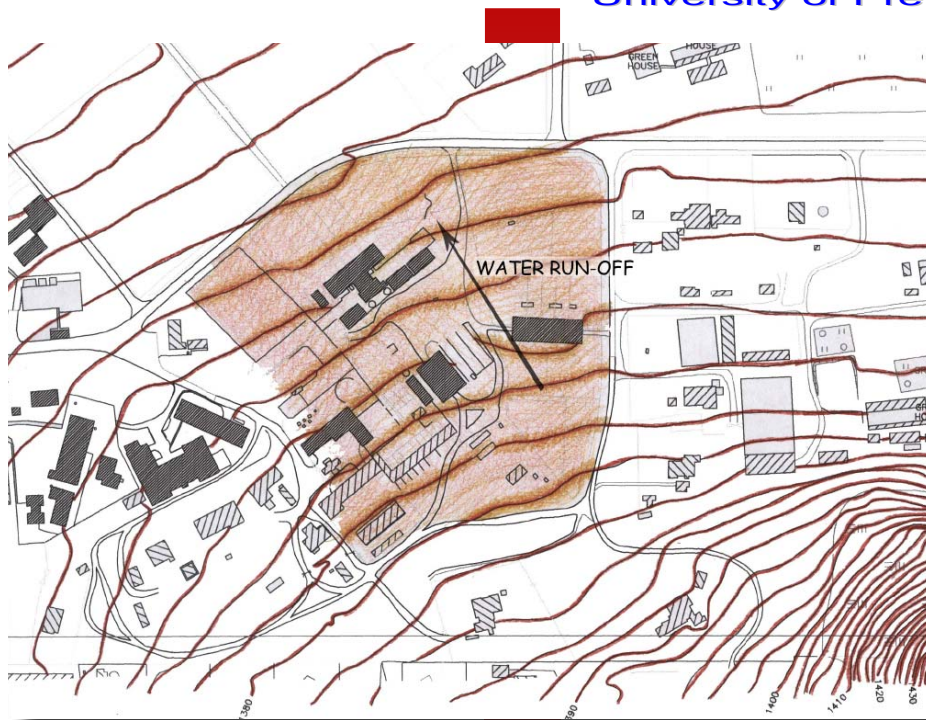


Fig. 16 - Contour map of site

It is the writer's opinion that the establishment of the Innovation Hub on the Experimental Farm will have a profound effect on the future of the Farm and further development. The position of the Hub on the eastern side of the Experimental Farm could open the Farm up to alternative and public access, and may in future become the primary entrance. The architectural development will most likely set the bar concerning expectation of any new projects undertaken, and alter the context of the Farm as it stands now.

Due to the fact that the Farm falls within the 'knowledge-axis' that is being established, the Wildlife Research and Rehabilitation Facility is likely to benefit from this association and that of the Innovation Hub. The Facility carries the same vision of creating a knowledge-based institution that further instructs students, while exposing them to the working world and establishing links to job opportunities by attracting local and foreign research and development companies and researchers.

#### Wildlife Research and Rehabilitation Facility - RESEARCH FARM

The introduction of a Wildlife Research and Rehabilitation Facility into the Farm is an attempt to maintain the Experimental Farm's relevance in the national and international realm without surrendering the land to total corporate development but nurturing open pieces of land. With a focal shift in society towards issues of sustainability and conservation, addressing wildlife concerns has become a very relevant matter. Broadening the disciplines within the Experimental Farm increases its sphere of influence and reaffirms the Farm's standing as a unique national asset.

The establishment of the Facility as an educational centre for research and training fits the required academic quota of the Farm and provides students in several interrelated wildlife disciplines with a 'classroom' for hands on experience. Wildlife care and research documentation administered by students guarantees an annual workforce at no labour cost.

By contracting an external company as an invested sponsor, the Facility is not solely dependent on University subsidy for construction and operational costs. By establishing a working relationship with an outside sponsor and creating outsourcing possibilities, the Facility will potentially require little financial support from the University. The use of existing structures and established services aids in lowering project costs. Generation of additional funding through the Facility by offering educational tours and lectures to the public could provide the Facility with greater financial independence and opportunity for improvement.

#### visual context of existing structures and landscape - RESEARCH FARM

The site gradually slopes down to the Northern sector of the Experimental Farm (Fig.16); this aids visual orientation and comprehension of the site and structure positioning when looking up at the site from the access road that passes in front of it (Fig.17). Grazing fields surround the structures on the terrain, leaving buildings exposed. Mostly exotic trees surround the buildings on site with indigenous trees positioned randomly along pasture edges. Approaching the front of the main building, there is a defined cluster of tall pine trees on the left, off-set by a large, old wild fig tree on the right. Trees on site are relatively few but many are rather old and grown very large, starting to obscure structures from view (Fig.17).



Fig. 17 - Visual access and tree placement on site

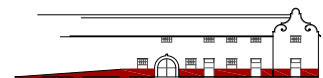




Fig. 18 - Front view of the main old stable building



Fig. 20 - Exterior view of stone cattle housing



Fig. 19 - Eastern view of the old stable buildings



Fig. 21 - Small pavilion to the side of the cattle shelter

The most prominent structure on the site is the old farmhouse type building. The building echoes Cape Dutch style architecture with gables, small windows and off-white plastered walls. A red tiled roof is complimented by red brick detail with dark brown, painted wooden doors and window frames. A stone retaining wall adds texture, almost contrasting the smooth architecture and finishing off the rural farmhouse feel. Two silos at the back of the building add a new dimension, contrasting the repetitive rectangular forms, yet reinforcing the farm overtone.

The silos are symmetrically placed on either side of a very strong symmetrical axis. The axis runs between the towering silos and through the prominent arch entrance of the symmetrical façade of the main building, down the gravel road that leads to the entrance (Fig.18). The gravel road is emphasised by paddocks on both side and crosses the main access round that runs past the front of the sites, carrying on for several meters into the distance. The other structures fan out behind the building that is front and central to the site,. It is the focal point of the site and a recognised node within the Experimental Farm (Fig.19).

Red coloured stone structures attract attention to the south-western corner of the site. These permanent buildings visually connect to the previous building through the use of stonewalls, brown painted wooden doors and window frames and red pitched corrugated roofs. The buildings were used to house cattle and include small outside pens (Fig.20). Next to the cattle shelters is a small pavilion. It is an off-white plastered structure supporting a corrugated iron roof (Fig. 21). These structures look as if they are part of the earlier development on the site around the same time as the construction of the main building.

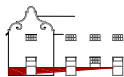




Fig. 22 - Steel cattle shelter



Fig. 23 - Equipment and feed storage shed



Fig. 24 - Concrete troughs

More recent additions to the site include an open steel shelter roofed with corrugated iron for cattle on the south-eastern corner of the site (Fig.22). There is a storage shed (Fig.23) for equipment and feed built of steel, corrugated iron and exposed concrete alongside three concrete troughs (Fig.24). These crude structures contrast the permanence and design of the main building yet maintain the feel of the site as a farm, suggesting change of infrastructure with progress of time and related needs.

The importance of structures on site is conveyed through use of materials, visually establishing a material hierarchy (Fig.25). Materials such as steel and corrugated iron that are accordingly classified low down the material hierarchy, are the materials that suggests development and new solutions.

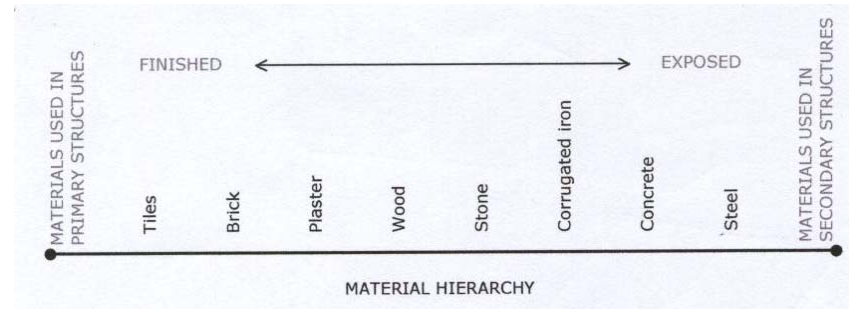


Fig. 25 - Material hierarchy

## Design - PHILOSOPHY

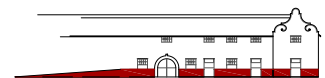
Whether artificial environments should be made to look natural, in terms of facilities such as zoos where wildlife are worked with and displayed, is currently under debate. Do environments need to look natural to be ecologically sound? This is the central issue around which the landscaping design and the development of the site needs to be approached. The needs of the wildlife are of utmost importance and their well-being should never be compromised in an architectural resolution.

The existing structures on site should be made use of as extensively as possible. The structures retain an aesthetic value, and the importance of the structures should be weighed and considered in the design development. The visual communication of the Cape Dutch building is very important as it carries the memory of a prominent South African architectural style, and relays the 1920's time frame in which the building was constructed (The Cape Dutch Revival). The building retains historical significance and should be handled with great respect. The Cape Dutch style sets a point of departure to which new construction should respond.

It is important for the physical centre to echo exactly that for which it stands. The Facility is looking to create awareness concerning the natural environment and the conservation and sustaining thereof. The inclusion of a sustainable architectural approach is imperative and should reinforce its importance.

Three different fields of approach need to be researched for a cognitive understanding of the demands on the project:

- Human spaces and design requirements as determined by function, and the treatment of the interface that develops where human space comes into contact with wildlife.
- Wildlife spaces and the needs of animals and birds influencing design, and the interface where wildlife comes into contact with humans.
- Contemporary design approaches to working with buildings of historical significance, conserving the architecture yet enhancing the experience.



PRECEDENT STUDY





**University of Pretoria etd – Lippi, N (2005)**

The study of precedents is used to set objectives and aspirations for the project and extended facility, establishing a conceptual context from which the design of structures and spaces can develop. The aim is to develop a context based on real life problems and resolutions, and not to dictate architecturally based decisions.



Fig. 26 - 'Flying' monopitch roof

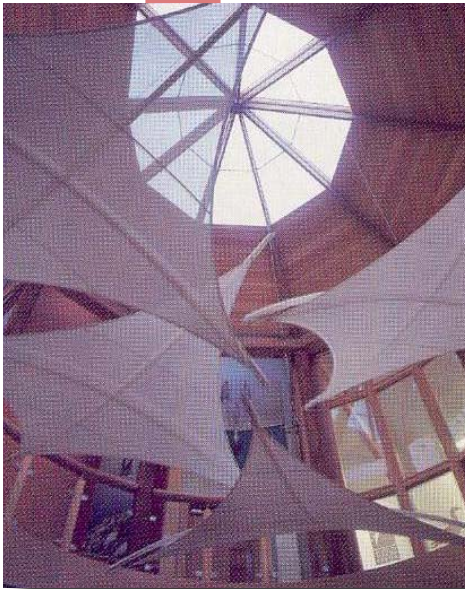


Fig. 27 - Stretched canvas reflectors

### design for human use and animal interface - HUMAN SPACE

educational visitors facility - SCOTTISH SEABIRD CENTRE

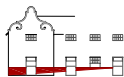
Fidra, Lamb, Craigleith and Bass Rock are islands situated just off the East Lothian Coast and are home to a vast number of seabirds. The Scottish Seabird Centre opened in 2000 and sits on the main coastline, looking out over the islands.

The building serves as a 'contemporary reinterpretation of the traditional seaside pavilion' (p 38). Simpson and Brown committed to a simple, wholesome, new building design, fusing both sound ecological principles and ethics with the experience of traditional materials and techniques. The footprint of the building is quite small with maximum use of natural light and ventilation. The battered stonewalls were inspired by local harbour walls and built by a local craftsman.

Visitors to the Centre are able to view the bird life on the island through telescopes and by remote control TV cameras, as if from a large bird hide. Interactive displays and latest telemetry enable visitors to control cameras placed on the island. Rotation, pan and zoom allow for the best views of the birds in their natural environment without disturbing them. Large screens display these images while an auditorium shows a specially commissioned film of Scotland's seabirds at regular intervals. The Centre is supported through ticket sales, for viewing of the exhibition, and by a small shop and café/restaurant accommodated at the centre.

A conscious attempt was made to use the roof as an expressive element. The 'flying' cantilevered monopitch was designed with the idea of a 'birds wing' and 'swooping curves', which give the building its special identity (Fig.26). Suspended canvas stretched screens diffusing light from a glazed cupola and wing-like reflector lights hint at the same source of inspiration (Fig.27).

DESIGNER: Simpson and Brown Architects  
SOURCE: Architects' Journal, 2 November 2000



The following two articles examine two very different projects but are both caught in the debate over 'nature versus artifice'.

In *Desert meets Desert*, the article explores the development of a zoo exhibit called Desert Lives, which incorporates natural desert land features into a comparison of animal and human adaptation in arid regions that exist in a separate part of the world.

The zoo experience has shifted from the small, barren cages of the early zoos, where environments were unhealthy and misrepresented trapped species, to a naturalism approach, where whole environments are reproduced. This raises the question of how far exhibits should go to hide human artifice in these recreations of natural scenes and does it send the wrong message that humans can create nature, "Is naturalism really a dead end?" (p.57). Landscape projects almost always need to balance artifice with existing ecological systems. Many educational exhibits represents a concept of nature that for most part excludes humans, yet humans are a part of, and hugely impact on nature. Should a balance not also exist in zoo landscapes? "... the best exhibits celebrate a diversity of viewpoints" (p.59).

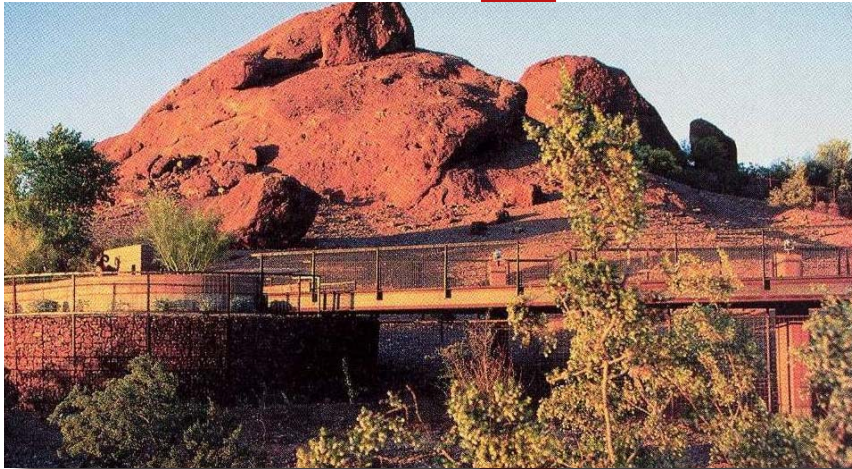


Fig. 28 - Man-made bridge in desert landscape

Desert Lives took the straight approach, which dictates that which has been built by humans should look built. Fake materials and elements were banned, like artificial rock, and designs tried to emphasize the existing landscape. Materials chosen were environmentally responsible and connected to the physical and historical context of the site. Architectural elements, constructed walls, paths and bridges can not be mistaken for natural features, yet fit in well with the landscape through design and choice of material (Fig.28). The experience of the zoo exhibit is fine tuned by elevating pathways to keep people from looking through fences, and through limited naturalistic designs (Fig.29). Naturalism is a broad term, interpreted in unique ways by most zoos and botanical gardens.

DESIGNER: Weddle Gilmore Architects

: Floor and Associates

SOURCE: Landscape Architecture, January 2001

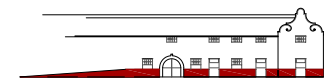


Fig. 29 - View over zoo fencing from elevated pathway

On the other side of the spectrum, *Nature Reconstructed* is the creating of a natural system on post-industrial ground. The site is now a nature preserve on the Eastern Scheldt in Holland, where land meets sea.

The common approach to introducing a functioning ecosystem would have been the design of a landscape that imitates nature. The reality is that a design does not need to mimic nature to function ecologically and fulfil its purpose. Although West 8 was commissioned to transform deposits of sand into man-made dunes, but the firm opposed that approach. "The artificial naturalism of dunes in a completely man-made landscape ran counter to West 8's design philosophy" (p.54).

West 8 suggested a whole new strategy. The proposed dunes would obscure views to sea and the horizon. With the preserve off-limits to people, the only interaction humans have is visual access from a highway that runs through the sections of land. Visual impact is thus very important. With an extensive understanding of the Dutch landscape ecology and the ordered systems manipulated since the thirteenth century, a design emerged that fulfills the needs of wildlife and reflects the "constructed nature of the landscape"(p.56) while stimulating motorists passing through.



## University of Pretoria etd – Lippi, N (2005)

The sand depots were levelled into large plateaus, opening up the visual link to the sea. Three areas were breeding habitats for bird colonies and were covered in shells. The shells were waste products from shellfish farms in the nearby area, and are representative of the farmers and their farms. Light cockleshells and dark mussel shells are arranged in broad bands and, check blocks of white and black, across the sections of land. Seeking place to nest, many bird species are attracted to the shells and adapted well to the new environment (Fig.30). The black-and-white compositions are visually very striking, creating rhythm for motorists passing at high speed and flocks of birds a source of constant activity.

The success of the project stimulates the debate of natural systems and whether a landscape needs to be natural in appearance to function properly. The shell field designs are an example of possibilities for human development and functioning ecosystems to co-exist in a vibrant environment.

DESIGNER: West 8

SOURCE: Landscape Architecture, July 1997

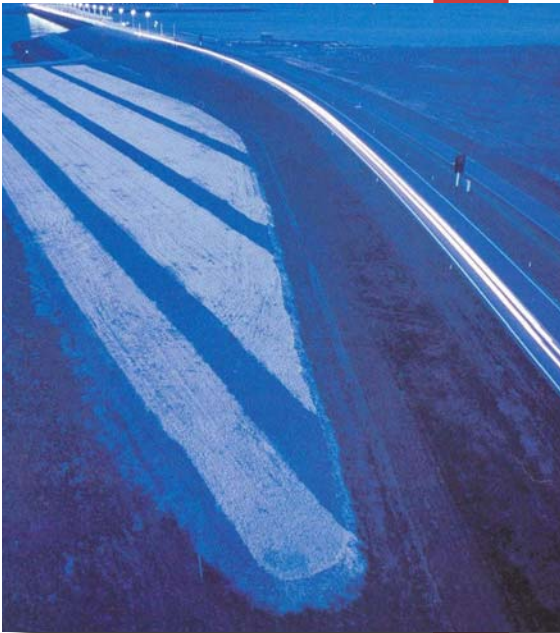


Fig. 30 - Shelled coastline

### DESIGN INFLUENCE

The debate on 'nature versus artifice' has not been resolved and leaves room for design interpretation and artistic licence. Every project has different objectives and there is no single recipe for working with nature. In an article about the design of a children's zoo (Dean 1998:34-39), the debate of the role of the artificial in 'natural' environments is again brought to the fore. To communicate on the intellectual level of a child, the educational experience was enhanced through the incorporation of artifice.

Design approaches have changed over time and we are now in an era where the holistic mindset towards nature and the influence of man is in limbo. A landscape design does not need to mimic nature in order to function ecologically and a balanced approach to the relevant issues is producing some of the best results. Just like landscapes are starting to respond to the surrounding built environment in their design, so should buildings take account of the surrounding environment and respond to it. Local influence can be included through use of local materials and labour. The study of the a Wildlife Educational Centre on the Teifi Marshes Nature Reserve (Architects' Journal 1994: 33-42) showed a similar approach in which the shape of the site influenced the building shape and building materials were chosen to manipulate visual impact, presenting a positive image of conservation.

### design for animal needs and human interface - ANIMAL SPACE

#### design for wildlife - ZOO DEVELOPMENT

The revolution we are witnessing in zoo design is redefining the term 'zoo' and reinventing the whole experience for the visitors and the animals alike. The departure from conventional zoo design reflects a shift in philosophy from the homocentric view of zoos as a display of human power over nature, to a biocentric view by which the zoo is seen as an educational medium that strives to explain the interrelationships between animals and nature. The Victorian era saw the beginnings of the modern zoo, when zoos assumed the form of urban menageries. Animals were viewed as curiosities or valuable collectibles housed in cages. Carl Hagenbeck introduced a more biocentric approach to twentieth-century zoo design in 1907 when he established his 'bar less' zoo. Believing that providing animals with as much freedom as possible was beneficial to both animal and visitor, steep artificial rockwork and large dry moats contained the animals in his zoological park. The biocentric approach is a basic conservation approach with advancement in captivity conditions and 'landscape immersion', which seek to place the visitor within the animals' habitat. The idea is to immerse people into habitats that they would otherwise not be able to experience,



bringing humans face to face with the animals that inhabit those environments. This reinforces the understanding that the animal and habitat are inseparable, reinforcing the principles of conservation.



Fig. 31 - Habitat replication at Henry Doorly Zoo

The Woodland Park gorilla exhibit took the zoo community's breath away and instantly rewrote the definition of Zoo. As the first realistic replication of habitats for gorillas, it enhanced the effectiveness of a zoo exhibit as conservation education, by providing an experience of encountering gorillas 'in the wilderness' and increasing the visitors appreciation of the gorilla itself (Fig.31). The levels of activity observed in animals while in their natural habitats are vastly higher than the levels of activity of animals confined to cages. In their new home their behaviour showed renewed curiosity and active engagement with their environment. Grant Jones and Jon Charles Coe were the landscape architects that created the gorilla exhibit in collaboration with director David Hancocks. Hancocks, an architect by training, sees landscape architects as leading the revolution in zoo design. The zoo-design field has become incredibly technical and architecturally challenging because there are no criteria. The most demanding challenges are those posed by the design concepts themselves, calling for recreation of natural habitats that meet the physical and psychological needs of wild animals. This high form of stagecraft helps achieve an appreciation of true wilderness. It is about changing people's attitudes, and the active experience encourages a receptive response to the educational message that lies at the heart of the zoo's mission.

Zoo design comes down to the animals. A zoo should be a place where people, animals, and plants interact. The only differences between wildlife parks, wildlife reserves and urban zoos should be the difference in the degree of the interaction and not the kind. There is no way that artificially created habitats will ever be truly natural. Predicting a shift towards a merge among similar institutions, L. Azeo Torre, FASLA, sees the future zoo expanding

into a collection of facilities including museums, nature centres, science centres, children's museums and botanical gardens, all historically segregated. Hancocks boldly states that zoos have outlived their time and purpose. He proposes that zoological and botanical gardens should become ecology gardens and he foresees that zoos will disappearing.

"Replenishment of the wild could be a next logical goal." - L. Azeo Torre (p.99)

SOURCE: Landscape Architecture, April 1997

#### DESIGN THESIS INFLUENCE

The well being of wildlife is positively affected when retained in a space that mimicks their natural environment. There is also an increased understanding of animals and nature by the public, and a heightened emotional connection to wildlife when viewed in these 'natural environments'. The application of artifice can become both an art and a science resolving human and animal needs.

Needs of wildlife determine the design of the facilities that house them. This was the case for the design of the RSPC wildlife hospital in Norfolk (Lindley 1993: 35-43). Specialists in the field of wildlife and animal care were consulted for input into design development. The Hospital supports public access to facilities for educational purposes but access is limited and the wildlife shielded as extensively as possible from the people. Neglect in the design for the human user can be seen in building. Although the animals are of utmost importance the human element cannot be ignored.

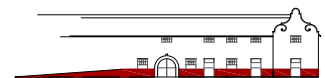




Fig. 32 - Hoedspruit Cheetah Project Centre, entrance



Fig. 33 - Moholoholo, wildlife holdings and display

The Hoedspruit Cheetah Project is a South African research and breeding centre for endangered species, established as a breeding and research program for cheetahs (Fig.32), expanded to include the breeding and conservation of other African species for re-introduction into the wild. The Centre provides the opportunity for the public to view the animals in closed natural habitats. This generates the main source of income for the running of the project (Karien Smit, Student Program Manager: Personal interview). The project has one of the best-developed facilities in the country, although Moholoholo Wildlife Rehabilitation Centre is the biggest (Fig.33). Brian Jones, founder and Manager of Moholoholo (personal interview), believes that a lack of public awareness is the biggest problem faced in conservation, and limited funding the biggest challenge for wildlife centres. Although the visitors are important to both centres, the wildlife/human interface is still under-developed.

### design approach – ARCHITECTURE

design and restoration for new use - SAB VISITORS' CENTRE

South African Breweries (SAB) centenary celebration saw the adaptation of the Newlands Brewery, the oldest brewery and malt house in the country, into a visitors centre. The idea behind the visitors centre was to restore the old Mariendahl Brewery (1859) and malthouse with kiln (1892) for new use as a reconstruction of the history of beer-making for visitors guided through this "most historic part of Newlands" (Japha 1998:13).

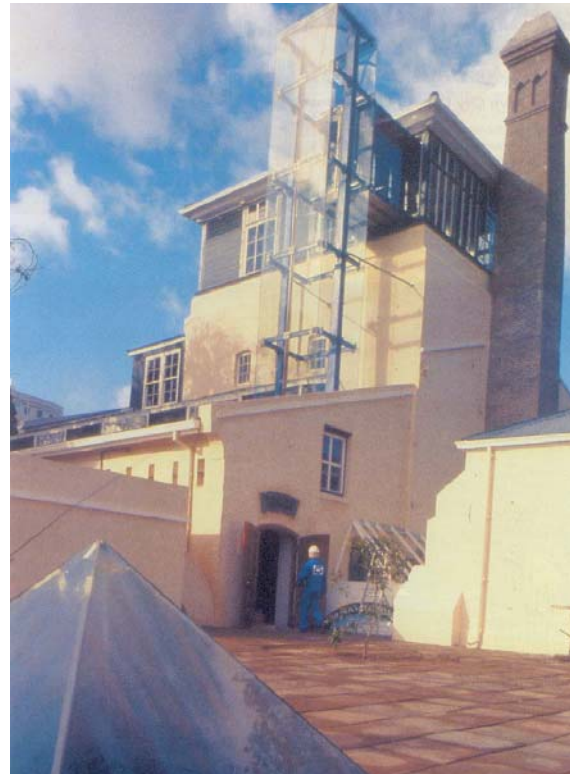


Fig. 34 - SAB Visitors Centre

The brief also called for the redesign of the landscape, provision of parking, lecture halls, dining and pub facilities for both staff and visitors and a memento shop. The 1863 distillery was also to be re-used as an environmental centre. The four discrete historic buildings are connected by a clearly defined visitors' movement spine and flow patterns for vehicles and staff. The new structures act as an ordering mechanism, connecting the historical elements and extending between the existing structures. Fagan's approach to conservation allows the historic fabric to acquire new use while the new is inserted carefully, visually separated from old - "coloured and coded as new" (De Beer 1995:13). Newly constructed walkways are literally colour-coded and constructed of modern materials, clearly contrasting with, and distinct from, the existing fabric, while leading visitors. High technology solutions used also show contrast: an information counter is freed from the floor through suspension, allowing the original to pass through and the counter to exist as installation (Fig.34).

Restoration, accommodation of new uses in old spaces and insertion of new materials and new structures are both creative and sensitive. Loose fitting structures order space and interventions are unmistakably legible, maintaining the integrity of the old while revealing themselves to the observer.

DESIGNER: Gabriel Fagan Architects  
SOURCES: Architecture S.A., October 1995  
S.A. Architect, November 1998

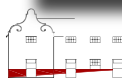




Fig. 35 - Front view of Bank Headquarters

“Since the 1960’s architects and developers in the West have had to devise acceptable ways of dealing with history, other than knocking down inconvenient old buildings... Crudest of all has been... whereby the exterior has been kept to satisfy planners while interior has been gutted... The other extreme of imagination is exemplified by work... where the new structure barely impinging upon the antique host shows how exhilarating can be conjunction of old and new” (p 28).

The Dutch practice of Erick van Egeraat Associated Architects was to convert an Italianate, nineteenth century building into the headquarters of the Nationale-Nederlanden Hungary and ING Bank (Fig.35). This rather conventional refurbishing project gained life and verve when a new structure protruded through the roof, disclosing the presence of the twentieth century in the building.

Unlike the glass and steel structure of Coop Himmelblau that appears to have swooped down on top of roof of a law firm in Vienna, a foreign structure seems to have evolved organically, swelling both down into the building and bursting out of the roof. The structure houses a boardroom, café and connecting staircase. This addition is known as the whale, its form grown out of special requirements, irregular curves moulding to the confines of the existing building.

The structure also acts as a lantern, bringing southern light into the building. Constructed mainly of wood and glass, the structure echoes the “structural grace” (p 31) of an old wooden ship as it ‘floats’ in a glass roof (Fig.36).

The first visual encounter is defined by extraordinary contrast. Rooted in Empirical pretension, the old building is ordered by solid, architectural, Classicism hierarchies. The new structure is organic, devoid of straight lines and angles. The architecture is expressed in light and air. At first there were public concerns about the presentation of the existing buildings integrity, but connections can be made between the abstract qualities of the old and the new, both informed by sensuality.

DESIGNER: Erick van Egeraat

SOURCE: The Architectural Review, July 1995

#### DESIGN INFLUENCE

New life can be breathed into an old building without destruction of its value and integrity. The dignity of the original structure and its architecture can be preserved through restoration and the accentuation of that which is new and has been added or changed. The use of original elements of the existing structure can bring value to the project and new additions while, contrasting of elements acknowledges time passed and the difference between the old and the new, the past and the present. Exposing some of the new interventions in the building to the outside shows honesty in the refurbishment approach.

The refurbishment of Hamilton Hall (Fraser 2004: 110-114), a stone clad neogothic building on an active university campus, shows the bridging of two time periods, moving the old building into a new stage of life. The exterior of the building was left unchanged while a modernist interior formed inside. This project shows how two contrasting architectural styles can be brought together. The needs of the user were researched and formed the basis of the design, giving the building new significance. Importantly the project shows how the making of substantial changes to sentimental old buildings will always be controversial to the public, even when the design is a success.

Approaches to working with historical buildings change over time with the development of contemporary ideas and underlining mindset of the period.

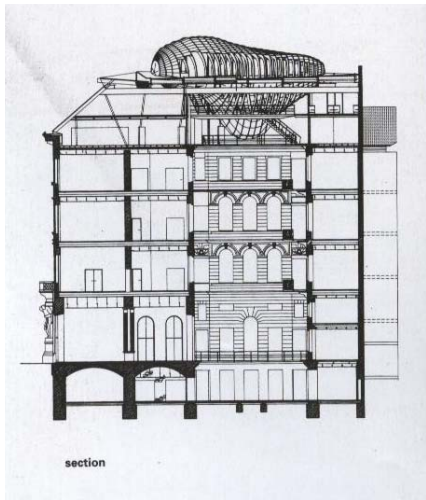


Fig. 36 - Section of Bank Headquarters

