

# CHAPTER 6

## Programme

*This chapter provides a comparative study of international and local zoo practices and regulations regarding the care and management of handling elephants in captivity, with a focus on elephant rehabilitation to assist in sustaining population numbers of compromised elephants.*

## AZA Standards for elephant management and care

*The intention for these standards are to provide the safest possible work environment for both elephants and their care givers.*

### ***Programmatic requirements***

The point of departure for this dissertation included designing a place of sanctuary for these magnificent creatures that provides a healthy and mentally enriching environment that prioritises their needs over visitors. The project aims to establish new zoological standards for elephants in captivity within South Africa and Africa alike, in keeping and succeeding international examples.

The project is informed by extensive research investigating behavioural patterns of elephants in the wild, and the lack of concern shown to those in captivity that hinder their natural behaviours.

### ***Spatial requirements***

Understanding the natural social patterns and behaviours of elephant herds in the wild should inform all spatial decisions when designing shelters for them in captivity.

As male elephants living in the wild tend to separate from their mothers and the matriarchal herd when they

reach a certain age, they either choose to roam on their own or join the bull herd. This tendency to separate needs to be addressed by including two separate day areas and night quarters for females and males (Foster and Partners, 2008).

These enclosures are set into the sloping site to optimise the use of thermal mass in the night quarters and the use of geothermal pipes for heating and cooling, to regulate stable internal environments and passive thermal performance.

The elephant community centre, being the large day area that allows for a sheltered and stimulating indoors environment, needs to be either covered with a glazed roof or left open to allow a strong visual connection with the sky and allow plenty of natural light into the space. This sense of light and openness inside a traditionally closed type of space is more characteristic of their habitats in the wild. If elephants are kept or choose to remain indoors during the day, it is important for them to be aware of the changing daylight patterns as the day progresses (Fairs, 2008).

This community centre needs to incorporate a public viewing and exhibition component to further increase elephant conservation awareness, while also allowing for general public and school children to ask the handlers questions concerning elephants. The public can then follow the elephants and the staff, who always act as the buffer between the elephants and the public, to the pre-cleanse area. Here they can witness elephants being cleaned and groomed, an important daily ritual for their health and hygiene.

The path leads to a final ‘surprise’ where visitors encounter elephants swimming in the hydrotherapy pool, from underwater and above-water viewing points.

The community centre and the night quarters enable elephants, particularly mothers and their calves, to congregate and sleep together in larger or smaller groups, as they would in the wild. The smaller night quarters also allow them to sleep alone if they prefer while still being in hearing and smelling range of their fellow herd members in adjacent quarters. These spaces will have heated rubberised flooring to keep elephants dry and comfortable, maintaining their foot health.

#### *Flooring surfaces*

As part of the National Environmental Management: Biodiversity Act 2004 (Act No. 10 Of 2004) of South Africa, the ‘Draft Minimum Standards for the Management of Captive Elephants’ states all artificial floors should be made of non-slip materials to reduce the risk of slipping. Artificial flooring should therefore comprise of either natural substrate or rubberised material providing a degree of ‘flexibility, elasticity and thickness comparable to natural substrate’.

*“Hard floor surfaces must be relatively smooth to*

*prevent excessive pad wear, but not so smooth that they become slippery when wet”.* – *AZA standards for elephant management and care, 2012.*

Ensuring that elephants in captivity have healthy feet and nails, a variety of different substrates used is essential – both indoors and outdoors. Sand is a great, natural substrate to use as a floor cover, in place of only using concrete; it has less impact on their feet and helps lessen the elephants developing foot problems.

Sand also provides elephants with additional exercise and helps strengthen their leg muscles as it proves more difficult to walk on, a necessity as they do not have the space to walk as much as they would in the wild. Sand piles located both indoors and outdoors help stimulate natural behaviours and opportunities for them to explore. Handlers can also hide objects in the layers of sand for elephants to find to stimulate and develop their curiosity and cognitive abilities (Fairs, 2008). Providing the elephants with ample amounts of natural substrate enables them to dust themselves after baths in order to protect their sensitive skin.

The flooring in the indoor enclosures will be heated for the elephants’ benefit, and will comprise of either sand or rubber flooring depending on the space. In the community centre, 1,2m of sand flooring above a heated concrete slab with adequate floor drains will be used. In the transfer halls and night quarters, rubberised flooring will be placed on a heated concrete slab, to effectively keep them warm and dry while allowing for easy maintenance and cleaning.

The outdoor yards should be maintained to allow sufficient grass to grow, unlike the current enclosure. Spaces should have a variation of substrate to maintain foot health and muscle development.



*Figure 6.1 'Friends of the Asian Elephant' (FAE) have built a new prosthesis factory on site for their injured rescued elephants.*

## Elephant shelter specifications set by the SABS and EMOA (Elephant Management and Owners Association)

Elephants are highly social creatures and should not, as far as possible, be confined in isolation. Elephant numbers should be compatible for formation of adequate size herds, which is no smaller than ten adult African savanna elephants according to the National Environmental Management: Biodiversity Act regarding the minimum standards for the management of captive elephants, 2009.

The minimum size of a shared day area for the elephants should not be less than 30 x 20m, as per the SABS requirements for elephant shelter designs. 1m<sup>2</sup> per 25kg of live body mass can also be used as a guideline. The size of night quarters provided for shared or single use should be equal to 25% of the minimum space of the day area. The day area should either be covered by artificial means, such as the use of 80% shading cloth being the minimum requirement, or have large tree with thick canopies to provide

ample shade.

Covered night quarters and interior spaces should provide the elephants a dry, comfortable space for them to lie down and rest – especially during extreme weather conditions. These night quarters should be of robust construction and draught-proof – as elephants, especially calves, react poorly to cold draughts.

Any window openings should be out of reach of elephants' trunks to prevent any damage and harm. Double enclosures, both indoors and outdoors, are required to move elephants when cleaning and maintenance is necessary. Each night quarter needs to be equipped with an adequately sized water trough raised above the ground (2000 x 750 x 400mm deep). Adult elephants drink 100 litres of water on average per day. Outdoor day yards should have additional water supplies, pools or mud wallows for drinking, bathing and

spraying purposes.

Scratching posts, designed as either columns, tree trunks or suitably shaped and sized rocks should be provided within the enclosure, as it is necessary for them to exfoliate their skin.

Open barriers built of steel pole construction should always have the steel sections placed vertically, not horizontally, to reduce the risk of elephants breaking their tusks in them. The circular steel sections, with steel cables running through, should be filled with concrete and have pile foundations to the necessary depth.

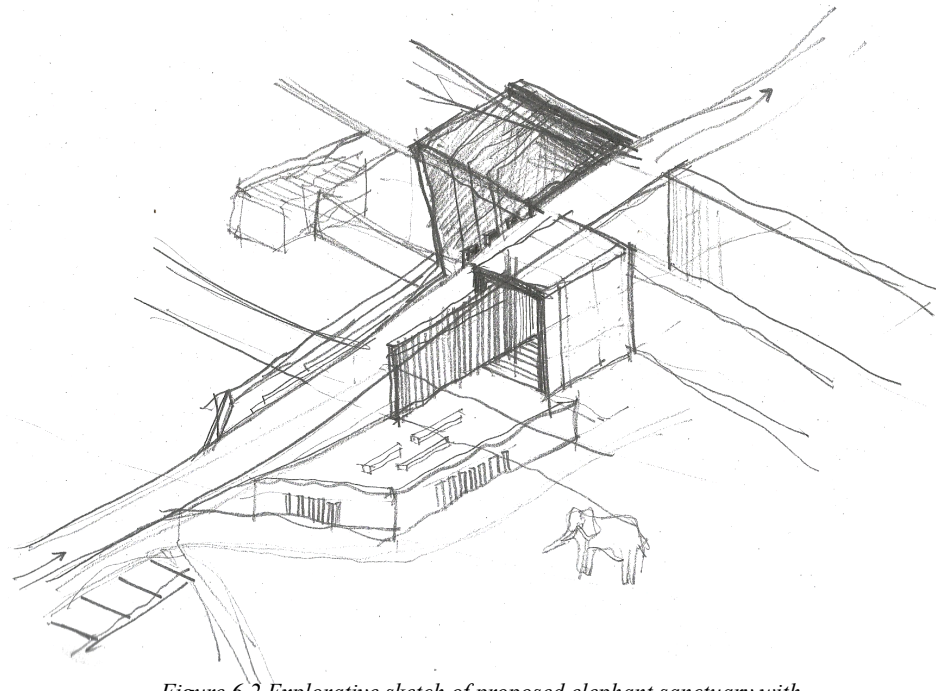
*Creating awareness: conservation, research and education*

The elephant facility needs to institute educational programs for visitors to promote an improved knowledge and understanding of elephants and the issues regarding conservation.

The facility managing a herd is entitled to contribute to elephant conservation efforts through public education, school programs and scientific research. Through these efforts, the facility should support conservation projects on a global scale.

*Nutrition*

Sufficient, enriching food that meets dietary needs should be provided daily in correct amounts formulated to ensure elephant health and appropriate weight.



*Figure 6.2 Explorative sketch of proposed elephant sanctuary with selective views to elephant spaces (Author, 2016).*

# Programme Exploration

## A SANCTUARY FOR THE WORLD'S GENTLE GIANTS, THE ELEPHANTS

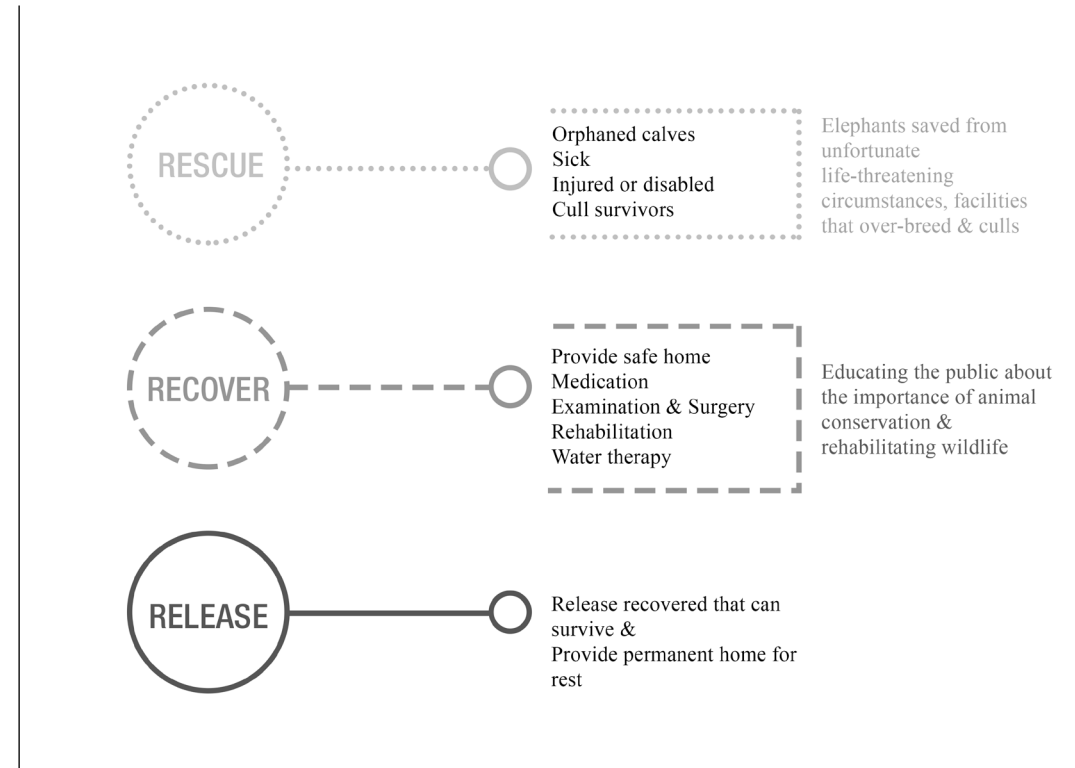
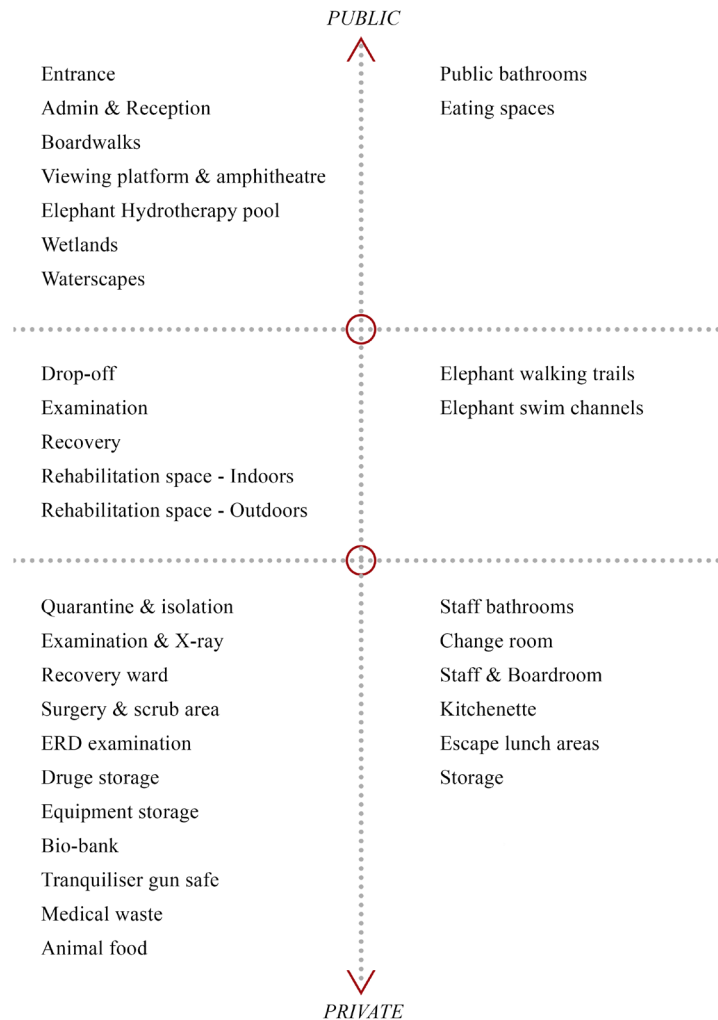


Figure 6.3 Left: Diagram indicating programme and accommodation requirements, ranging from public to private (Author, 2016).

Figure 6.4 Above: Diagram of Programmatic concept of elephant rehabilitation (Author, 2016).

# Elephant Rehabilitation

## *Rescue · Rehabilitate · Release*

These three principles form the essence of the design scheme and program, and will assist in the design development of the elephant enclosure to accommodate different spaces that aid in the elephants' recovery.

The sanctuary provides safe refuge for these vulnerable creatures, providing them ample walking trails and spaces to roam, mud pits, swimming channels and hydrotherapy pools for their rehabilitation and well-being. A variation of hard and soft spaces will give them the freedom to alternate between various spatial conditions in attempts to recreate their wild habitats.

Creating stimulating and enriching living environments for the elephants is essential for both their physical and mental development - a factor that is not currently being met by the existing enclosure.

### Rehabilitation

*It is important to recreate elephant's natural and wild habitats as a starting point in their recovery. Their habitats provide them with a variety of physical conditions which are essential to their physical health, development, protection and mental well-being*



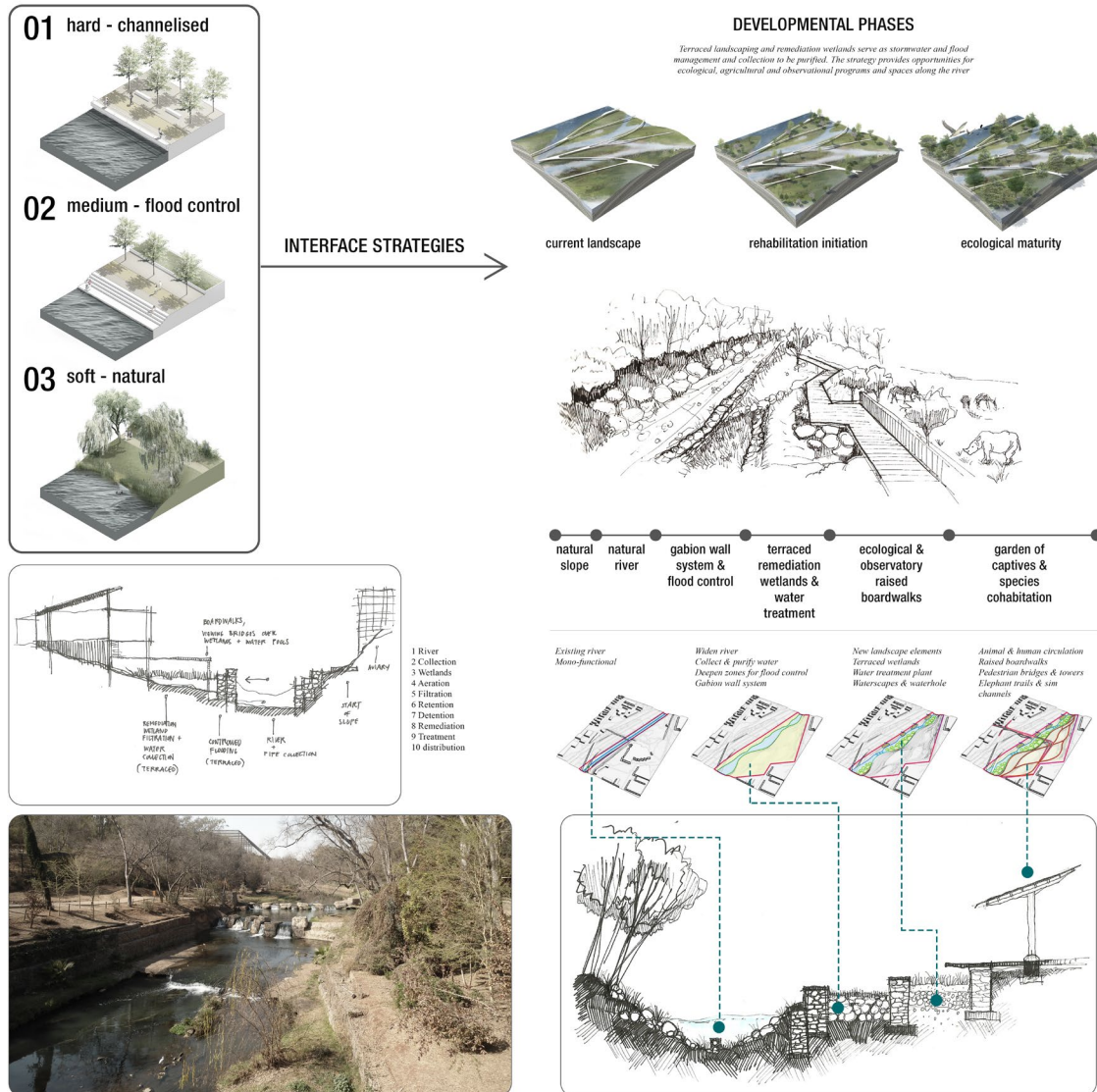
*Figure 6.5 Above: Three natural conditions which facilitate elephant rehabilitation (Author, 2016).*

*Figure 6.6 Left: River rehabilitation strategy (Author, 2016).*



# River Rehabilitation

## RIVER REHABILITATION STRATEGY



## Apies River purification

One of the largest problems that zoos situated in cities experience is not having adequate amounts of water to provide their animals. Elephants in particular drink on average 200 litres of water per day. Water from the Apies River will therefore need to be collected, together with rainwater, to satisfy this demand as well as other requirements such as cleaning, swimming and bathing for thermoregulation.

Due to this high demand, it would be far too expensive to provide elephants with only potable water from the municipal supply. It would be highly feasible to feed elephants filtered and purified water from the river. The water would need to be passed through a trash trap (for debris), an oil trap, a biofilter and lastly a UV filter to sterilise and bring the water to a potable water level safe for elephant consumption. This potable water will then be pumped and stored in large underground tanks or subsurface reservoir in a restricted area near the building. This will form the primary storage area.

There are 5 categories of water pollutants to remove:

1. Floating debris
2. Lighter than water
3. Heavier than water
4. Dissolved in water
5. Pathogens



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*Figure 6.7 Hanako, the world's saddest elephant alone in her cell.*

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***“The world’s saddest elephant dies after 60 years alone in her cell.”***

*The world’s loneliest elephant, Hanako, passed away after spending sixty years alone in her cell at the Inokashira Park Zoo in Japan. Her small, barren, concrete enclosure, where she spent more than 6 decades in solitude, contained no trees or vegetation. For most of her life she had never felt or been exposed to grass or earth, or the companionship of another elephant or animal (Schelling, 2016).*

*Elephants are highly complex and social animals who naturally live in herds with extended family networks, accentuating the cruelty in isolating these creatures (San Rafael, 2015). As a result of her unforgiving isolation, she lived a life devoid of any social or emotional connections, and any form of enrichment.*

*Hanako, an Asian elephant that resided at the Inokashira Park Zoo in Japan, spent sixty years living in a small, concrete enclosure with no trees or vegetation. Elephants, who are highly sociable animals, build lifelong relationships with other elephants – with both family and friends. Hanako, who had not seen or interacted with another elephant in decades lived a life devoid of any social or emotional connections, and any form of enrichment. In the barren, treeless cell where she spent six long decades, she never felt grass, soil or the closeness of another elephant, yet alone another animal.*

