addendum

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At the end of 1825, Mziligazi arrived in a valley between the Magaliesberg and Dasppoortrand. The river that sustained them, was called Enzwabuhlungu or "river which hurts:' so named because of the action of its sharp dolomites on the bare feet of the woman drawing water from it. In the elbow of this river, the city of Pretoria evolved.

Ironically today the Apies River has reverted to being a "river which hurts". Somewhere along the line, as the pace of life quickened and the demands of transportation and a growing economy increased, the Apies were forgotten. The valley became a corridor and the river became the city's biggest drainage ditch.

The route of the Apies River not only determined the pattern of urban development in the inner city, but the river also creates continuity and enhances the legibility of the urban structure. In the same way, the river should be used to blend ecology and urbanity in order to create a living, stimulating and economically viable spine for the inner city. It should become a place of public engagement: where once developments turned their backs to the river, developments should front the river and embrace the river in its architecture, social and economic activities.

Throughout history, public space has formed the backdrop to public life, for commercial transactions, social exchange, entertainment and contemplation. The Apies River must be rehabilitated to such a place that is filled with energy and a sense of enjoyment that is derived from spending time in such a lively public setting. It should become a place of enrichment to human lives.

"Architects have a special role of leadership to play in changing our views on prosperity, productivity and quality of life. The new ethical standard for the profession of architecture is based on the respect for human life as part of the natural world and its complex processes." [William McDonough]

According to the Apies River Urban Design Framework, Berea should function as a gateway to the inner city from the south. To my view buildings worthy of a gateway setting are public buildings, like for example the Pretoria Train Station, and buildings that promote and enhance public engagement and public life. Historically, Berea Park functioned as a place of the social gathering and as the place where sport developed in Pretoria. On the mind maps of every citizen then, Berea Park was clearly located along with Church Square and the Train Station. As one enters Berea today, however, you are confronted by vast, green open spaces

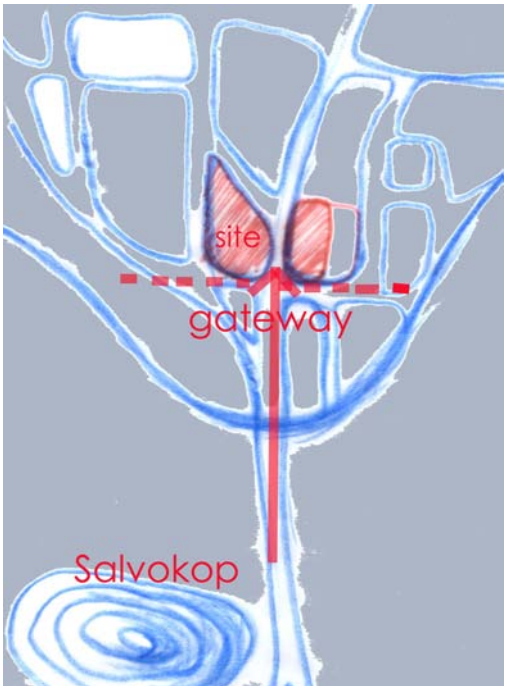


Fig. 001 Berea as a gateway setting

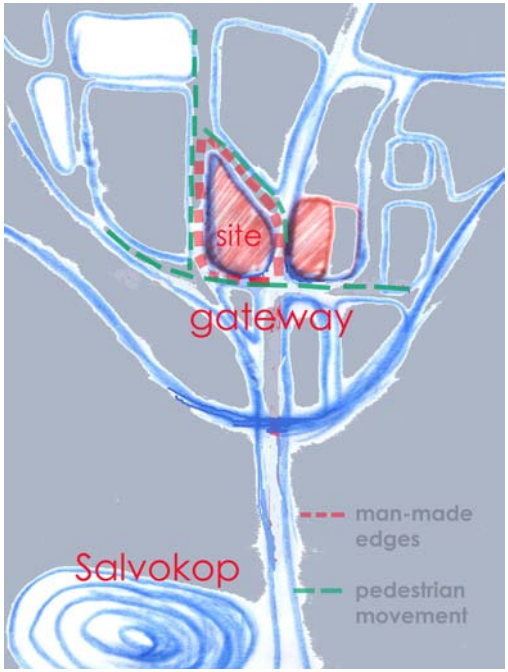


Fig. 002 Pedestrian movement & man-made edges

that are inaccessible and neglected. These spaces should be developed in such a way that they would regain an important place on the mind maps of people living in Pretoria.

The current land uses of Berea are mainly residential with retail and office developments on the western side of the river, towards the station. The figure ground study clearly shows that the area needs to be densified in order to change its character from a suburban to urban character and to create a feeling of containment. I propose that the open spaces should be reevaluated as to which are still necessary as sport fields [keeping in mind that the Caledonian Sport Stadium is in close proximity] and develop public parks and public buildings, for example a library, in these open spaces that are not used. The Berea Park Sport Club [dating back to 1907] should be restored as well as residential houses dating back to that same era in the precinct. This sport club is currently functioning as a high school and this needs to be upgraded and developed for its function, as well as the sport fields adjacent to it. The site on the corner of Nelson Mandela Drive and Willow Street, on the eastern side of Nelson Mandela, should be developed in order to enhance the feeling of a gateway.

On the southern boundary of the chosen site there is east-west pedestrian movement due to the fact that it is between two train stations [Pretoria and Mears]; whilst on the eastern boundary there is a north-south movement to and from the inner city. This pedestrian movement should be enhanced as well as utilized in the design to create public engagement with the building and the activities of the building. The site is isolated from the adjacent sites by man-made edges, an obstacle to overcome in the design.

"The existence of public life is a prerequisite to the development of public space, Public space is the stage upon which

the drama of communal life unfolds. The streets, squares, parks and public buildings of towns and cities give form to the ebb and flow of human exchange... The relationship of public life to public space is dynamic and reciprocal and made up of many strands. The task of architects and urban designers is to weave these diverse elements into a sustainable, integrated fabric that takes account of the spatial, social and technical system that constitute the private and public life of the city." [Slessor, C. 2001]

The aim of the design of an Adventure Center in the inner city is to create a building that not only supports the vision of the urban design framework, but a building that uplifts the precinct and the lives of people living there, even though the majority of users will not be from the area and in the above-medium to high-income class. It should become a place of meaning through its function: like a river in rural areas used for washing clothes becomes a place for exchanging information. This can be done not only economically through the functioning of the building, but also by incorporating human activities in the natural system the building is surrounded by. In close proximity of the site, the Voortrekker Monument and the Fort Klapperkop hills are used almost everyday by mountain bikers. There are a lot of opportunities in and around the site that will enable mountain bikers to ride in the heart of the city. Workshops and group events, leadership, team building and youth programs at the outdoor adventure center will also play a major role in the upliftment of the precinct, even taking it back to its historical role of developing a sporting or active lifestyle for the people in Berea.
In creating an appropriate interface with the river, it is important that

Fig. 003 Mountain bike tracks in close proximity of the inner city

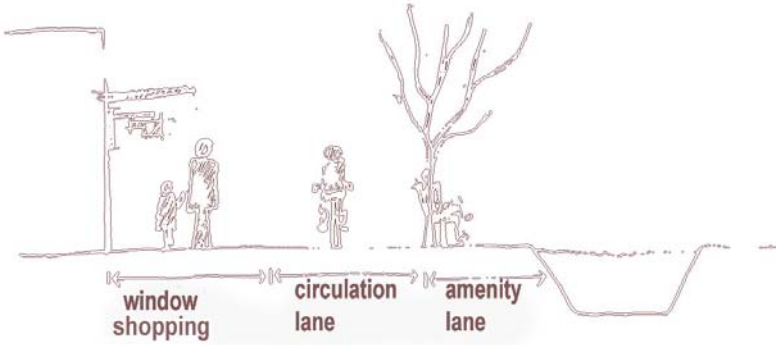
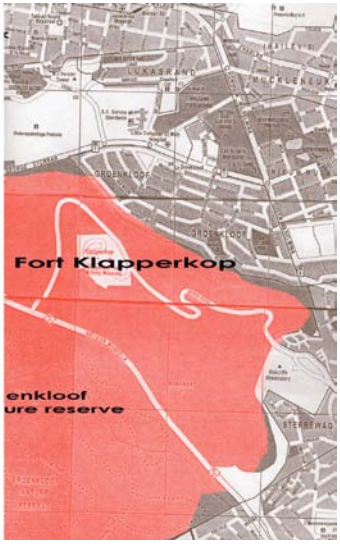


Fig. 004 Boundary interface with river



the boundary interface with the river shouldn't be fenced off, creating a dead space next to the river. The river itself should be used as the site boundary and the boundary interface should be filled with activities. Spaces should be defined by the building itself. Screening should only be used for privacy purposes. The building should interact with the river activities as well. The riverside views should be taken advantage of by utilizing glazed facades or glazed openings. This will also allow for indoor/outdoor connection. Passerby connection should be multi-sensory; this can be achieved by designing the elements in contact with pedestrians on a human scale. The height of the building should be relevant to its gateway function and in context with its surroundings, whilst the coverage and the distance from the river should be determined by the specifications of the urban design framework.

This design will use the Apies River in the integration of natural and technological systems, by diverting some of the river water through the building and using it as a test canal for canoes and kayaks. By incorporating the river into the design, it not only supports the urban design framework, but also takes the river to its natural state before it was channeled. Stored rainwater will be used in the "rain room" to test the wet weather equipment. Obviously the hydrology, in terms of pumping water into the Apies [from the springs at Fountain Valley] again, should be restored or changed. This can be done easily due to the fact that the pumping station and reservoirs for this kind of operation, is in close proximity of the site. This will flow life into the Apies River again, returning it from a drainage ditch in to a natural river system.

Fig. 005 The heart of the city

As the initiator of this project, Mazda will also fund this project. The following information explains their position and their intentions with this outdoor recreational equipment centre.

Mazda is entering a new era. An era that will be led by its new "Zoom-Zoom" global brand positioning philosophy, possibly the most radical brand development project in the history of the Mazda brand.

" Zoom-Zoom is the sheer joy of motion that everyone experiences as a child", explains Mazda Marketing Manager, Rob Crause. " It's that childlike fascination which children have when they experience motion. It's that first feeling of excitement and independence. The difference is that some adults never lose that feeling - and they're our target customers. They remember their childlike feelings and driving is always an experience for them. They never lost the spark."

The Mazda Drifter Adventure TV program was born out of Mazda Drifter's involvement in Adventure Racing in 2001. During 2002 the show evolved into an 'adventure lifestyle' program that broadcasts anything adventure related i.e. Adventure Racing, Mountain Biking, Trail Running and International adventure sport events. In 2002 they got involved in mountain biking by sponsoring the national endurance series.

A further development for them is an outdoor adventure center, where everything that is needed for this lifestyle can be bought. This will also function as the TV studios for the Mazda Drifter Adventure Zone television program.
Mazda Drifter are heavily involved in grassroots development of adventure sports and with this center they want to play an active role in the development of outdoor sports in the community by organizing workshops and group events, leadership and team building programs and youth programs - teaching our children to come out and play.
This initiative is vital to the success of positioning South Africa as an adventure haven - an eco-tourism initiative that Mazda Drifter has embarked on in conjunction with SA Tourism.

Fig. 006 **Mazda Drifter marketing logo**

Fig. 007 Mazda Zoom-Zoom logo

Workshops and group events:
Experienced staff will hold workshops ranging from mountain bike techniques to tent care. The group events would entail for example a group of riders meeting at the center and riding together in the city and in the adjacent nature reserves or climbers coming together to train on the climbing wall.

Leadership and teambuilding program:
This gives corporate companies the opportunity to enhance their work force:

Sample program:
9h00 Welcome, registration and introduction
9h30 Experiential team building exercises:
THE BLIND SQUARE- task vs. process, participation, leadership and decision-making.
THE ELECTRIC MAZE- collaboration, teamwork and communication.

12h00 Break for lunch.
13h00 Introduction to the high adventure rope course.
Safety guidelines, harnessing, technical introduction to equipment.

13h15 THE CLIMBING WALL
KAYAK AND CANOE TEST RUNS
MTB TRACK

Youth program:
With this program the mission is to enrich the lives of young people, in particular those from disadvantaged backgrounds, through outdoor adventure and educational events. This entails day events where the program will provide challenge, reassurance and inspiration; the individual provides enthusiasm. It's a recipe for achievement and reward: increasing self-esteem, personal confidence and respect for self, others and the environment.

"Keep close to Nature's heart... and break clear away, once in awhile, ... climb a mountain or spend a week in the woods. Wash your spirit clean." [Muir, J. 2000]

Due to the fact that this building will house five specialty shops, this adventure center will have a wide spectrum of users, ranging from the outdoor enthusiast to the pro outdoor athlete. Socially these users will fall in the medium to high-income bracket because these kinds of sports are relatively expensive to practice. The fact that the center will also involve the surrounding community, with the youth, leadership and team building programs as well as the annual sponsored competitions, will attract the medium to low-income bracket user.

The outdoor enthusiast is mentally a different breed: they're the kind that are haunted by some obsession to be the best, climb the highest, row the wildest and ride the unthinkable. They're the kind who would race 36 hours non-stop in an adventure race, climb Everest or race across the Alps with their bikes, just to say that they did it. There is something more to them than the ordinary homo urbanitas, the dweller in the city: they stretch the limits of living, seeking the answer of what being human really means.

" There is no substitute for the experience. There is no substitute for finding out for one's own self, for the personal revelation, for knowing firsthand. When I climb, that happens. The body and the spirit become one. Climbing becomes prayer and praise and applause for me and my Creator. When I climb I am filled with confidence and the faith that word contains. I can face unanswerable questions, certain that there are answers...
The religious experience, you see, is too important to be confined to church. It must be available to me at every moment. When it is absent I am, in that sense, no longer living. I exist. I am on life supports, outside of life, like a patient in a coma. I am unconscious, unaware of what being human means. One way to come out of that coma is to be a climber." [Adapted from Seeham, G. 1981]

Affected parties:
The development will effect the surrounding developments by bringing activity in to the area. This will lead to the increase of vehicles in the area as well as the increase of feet and cyclists, this being the worst on competition or training days. Seeing that the surrounding developments are retail developments and a hotel, this increase of people will only benefit them. The only possible negative effect of the development might be the increase of noise pollution in the area, especially on competition and training days.

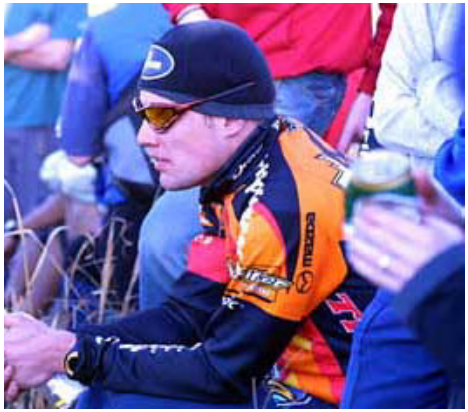


Fig. 008 Fritz Pienaar

Fig. 009 Trans Alp

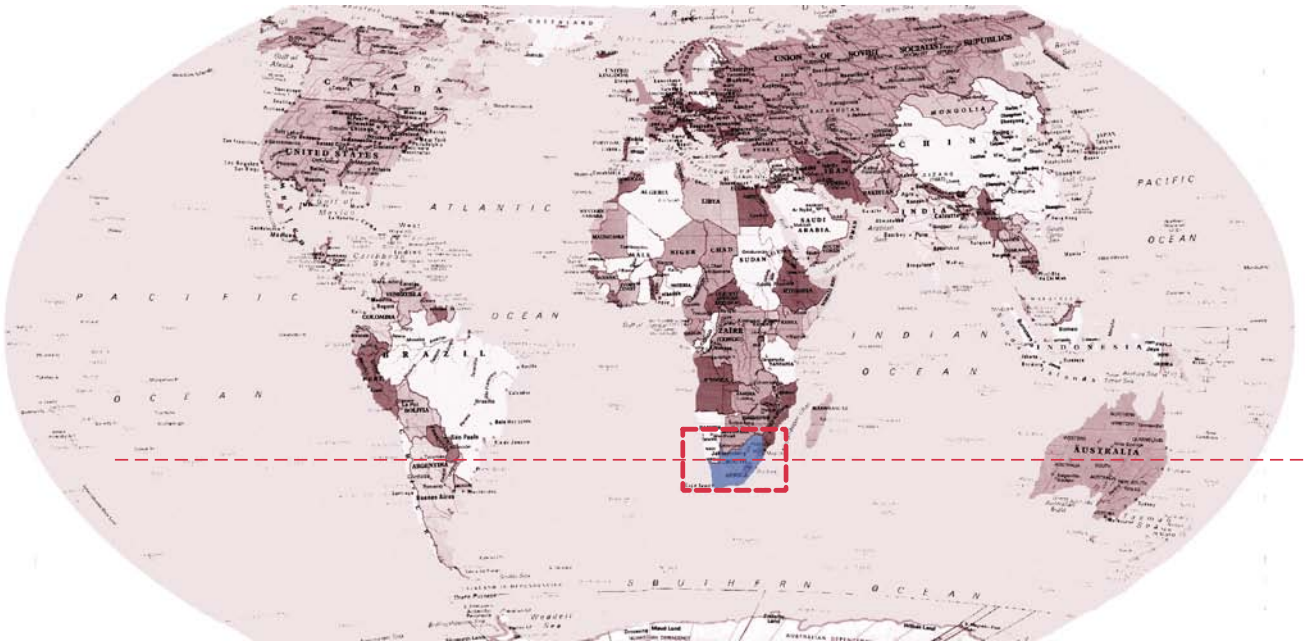


Fig. 010 World map

brief: locality

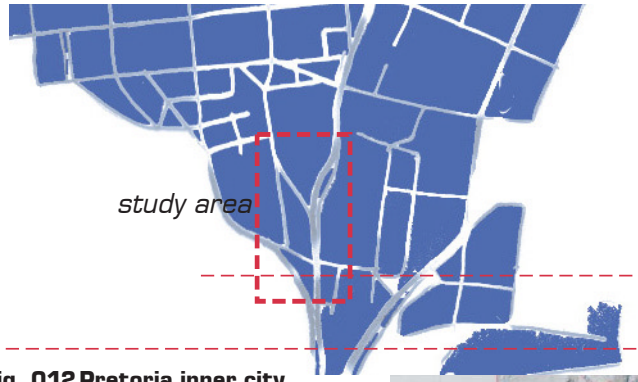


Fig. 012 Pretoria inner city

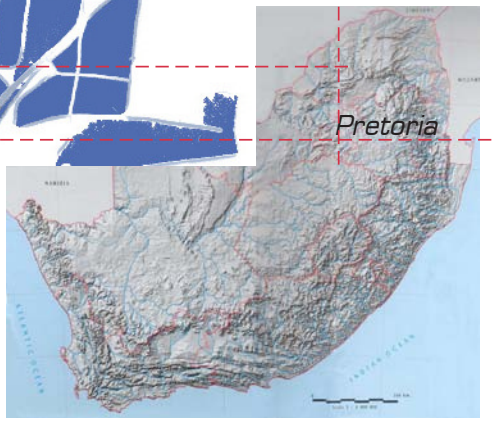


Fig. 011 SA map

INTRODUCTION

Berea is the most southern part of the Inner City. Even though it is considered to be the southern gateway to the city, this area has been neglected. This important area has only been dealt with in the Apies River Urban Design Framework on a broad scale.

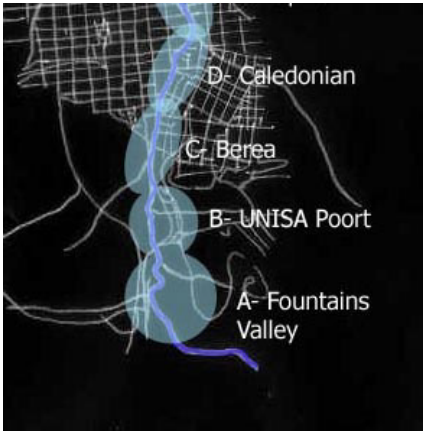


Fig. 013 Precincts in close proximity of Berea

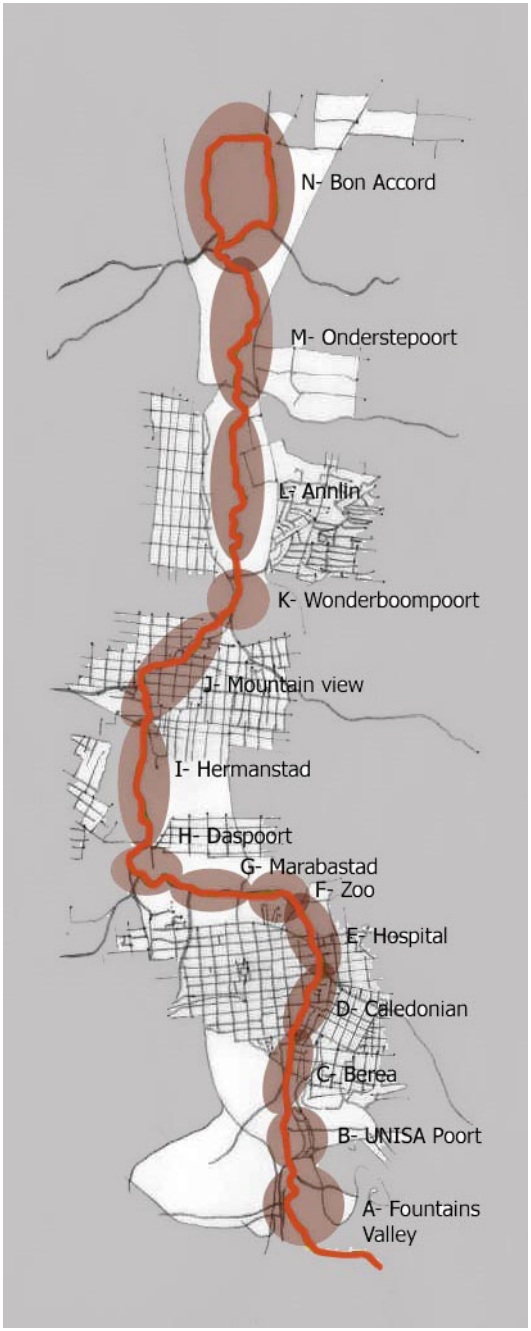


Fig. 014 Apies River and its precincts

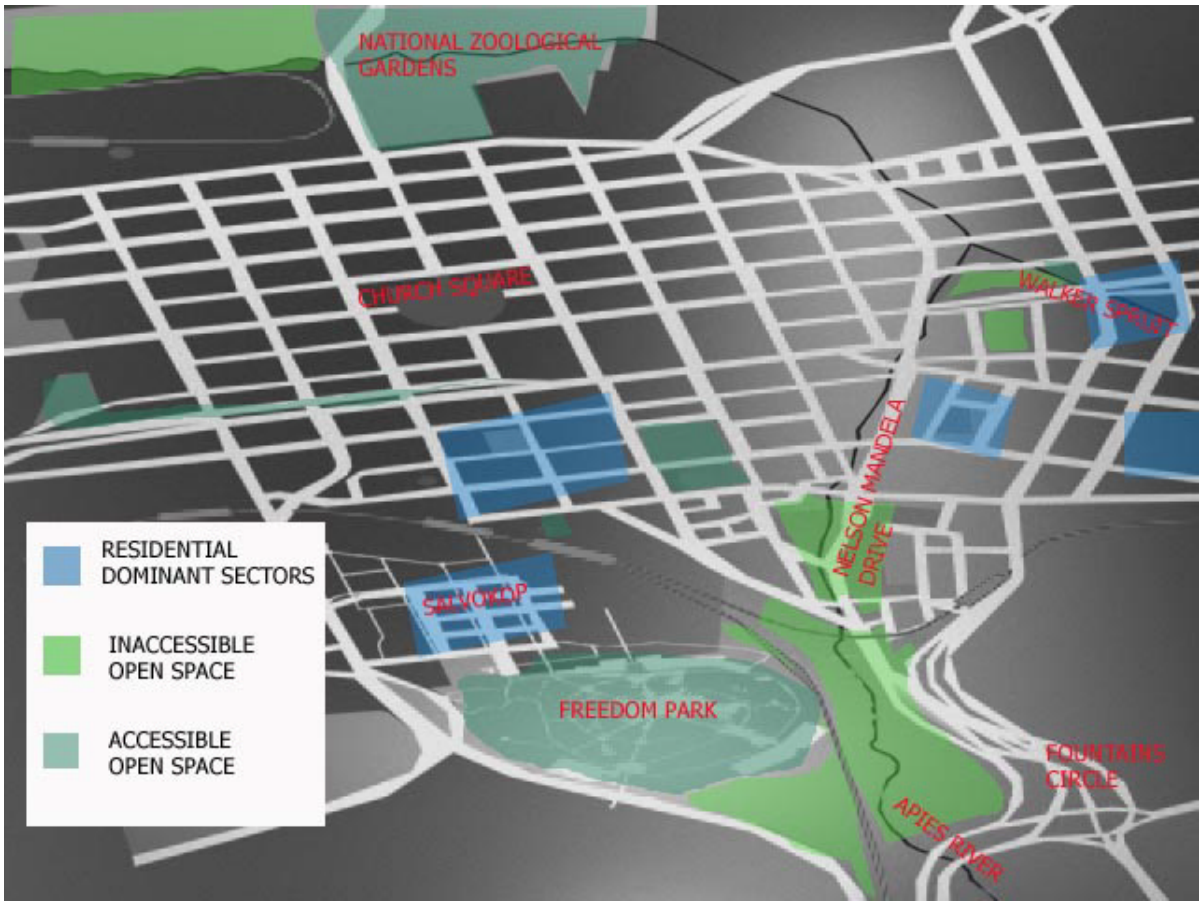


Fig. 015 Locality of Berea

character category

Fig. 016 Character category of precincts

Fig. 017 Open space network of the inner city

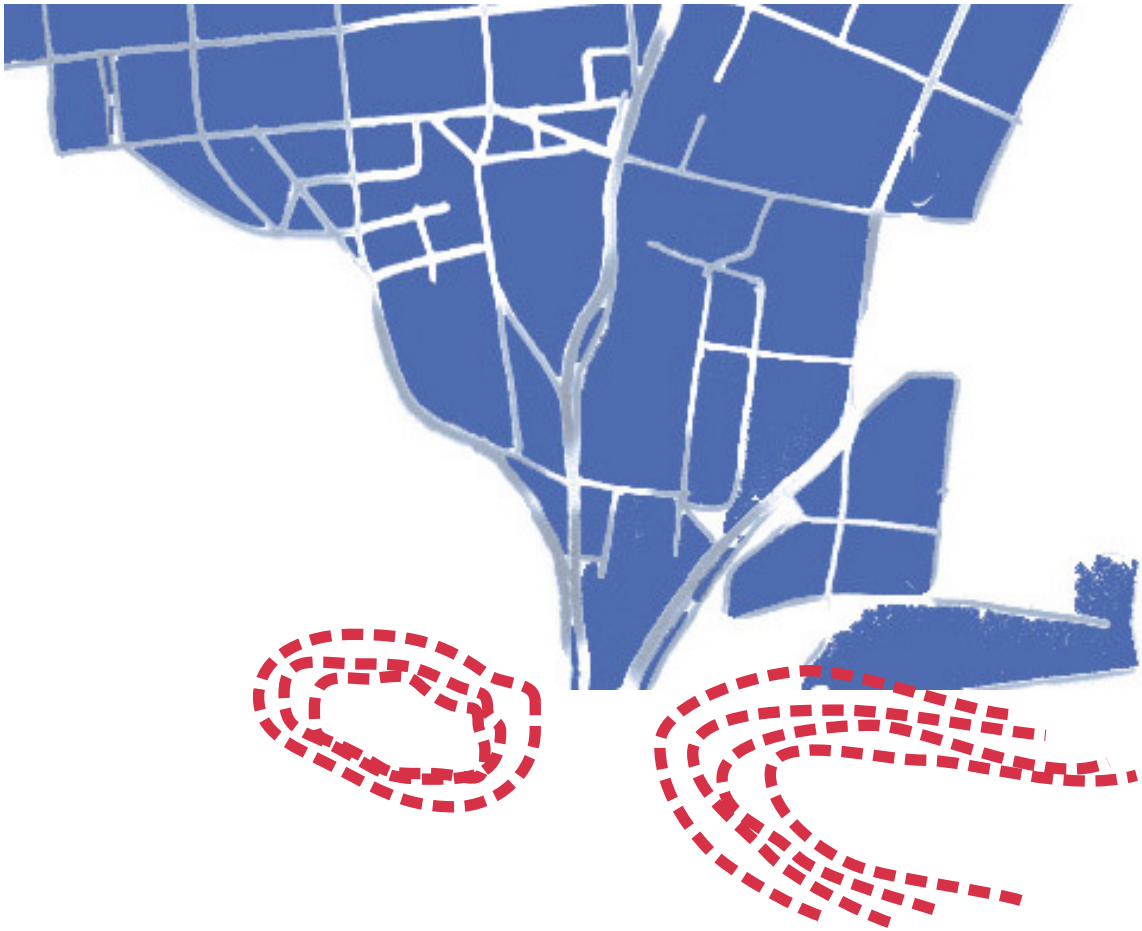


Fig. 018 Main structural elements of the study

Unlike the rest of the inner city, the main structural elements of Berea creates a unique urban grain.

Fig. 019 Transport and movement

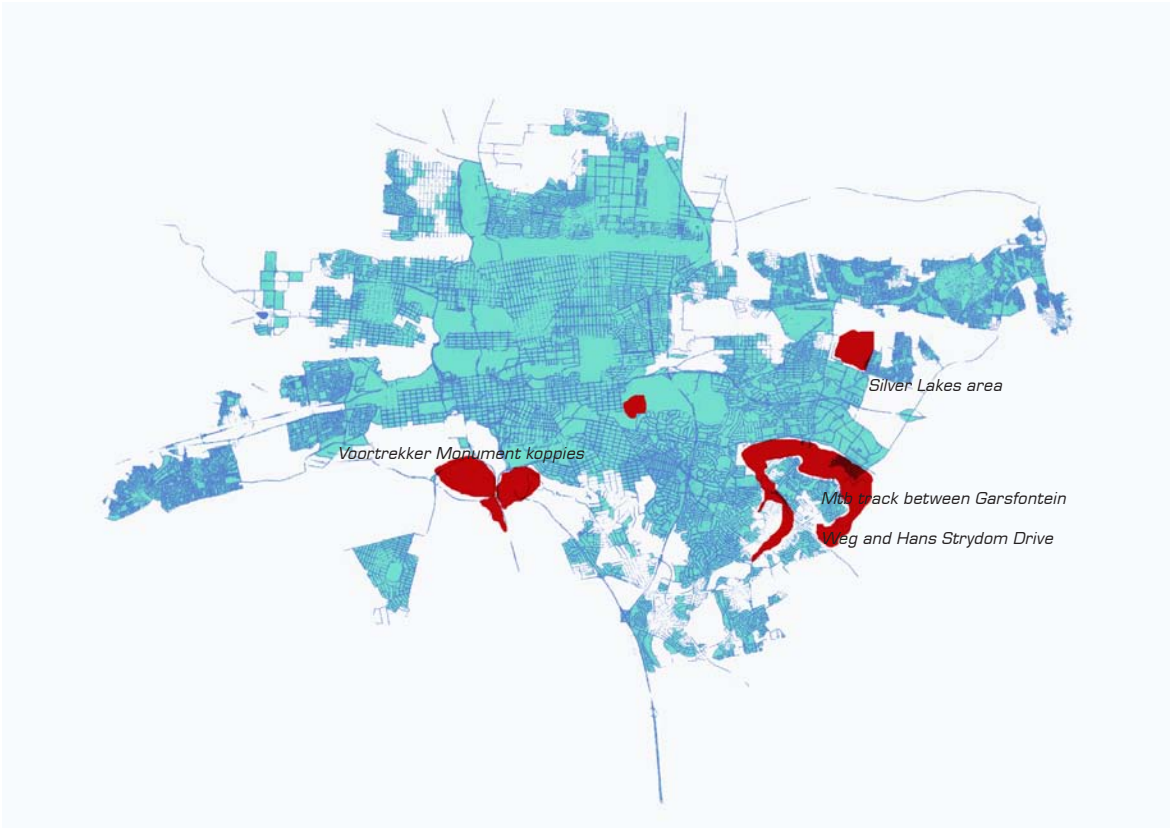


Fig. 020 Location of adventure sports in PTA

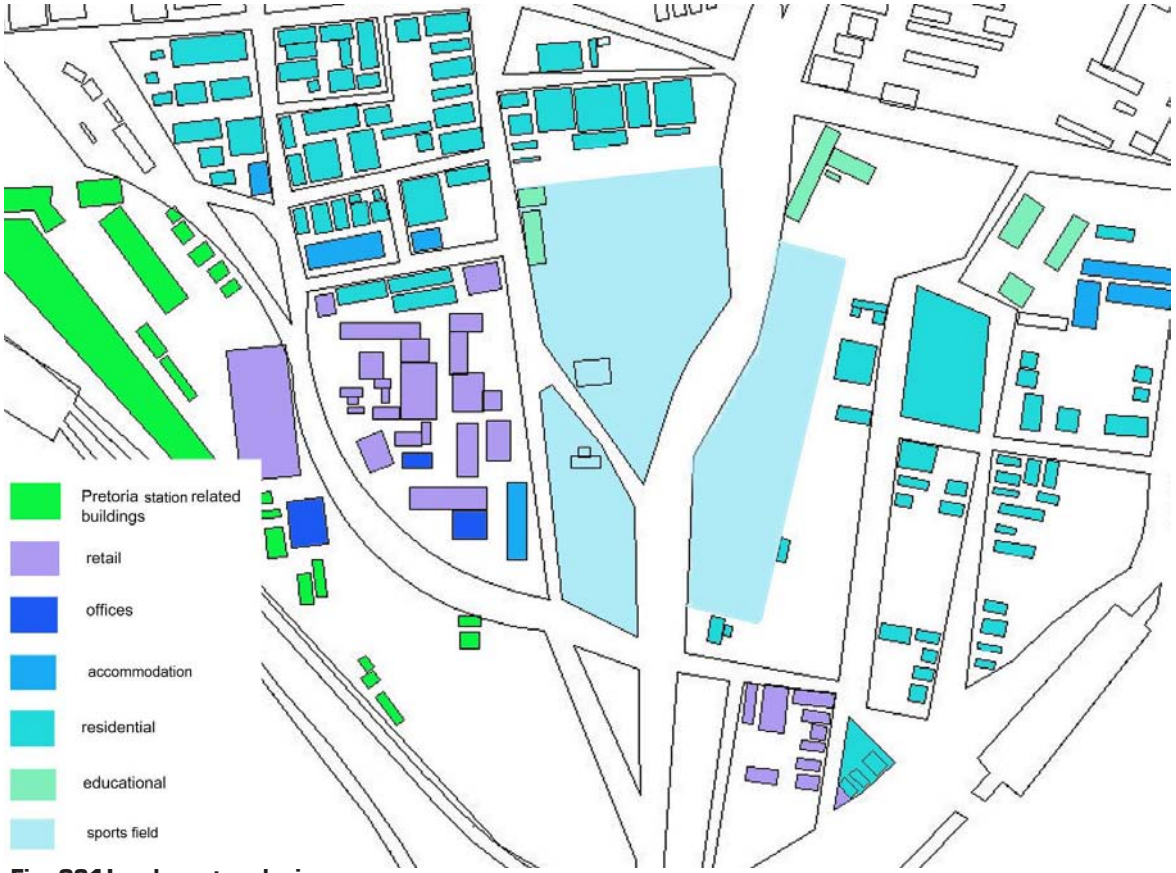
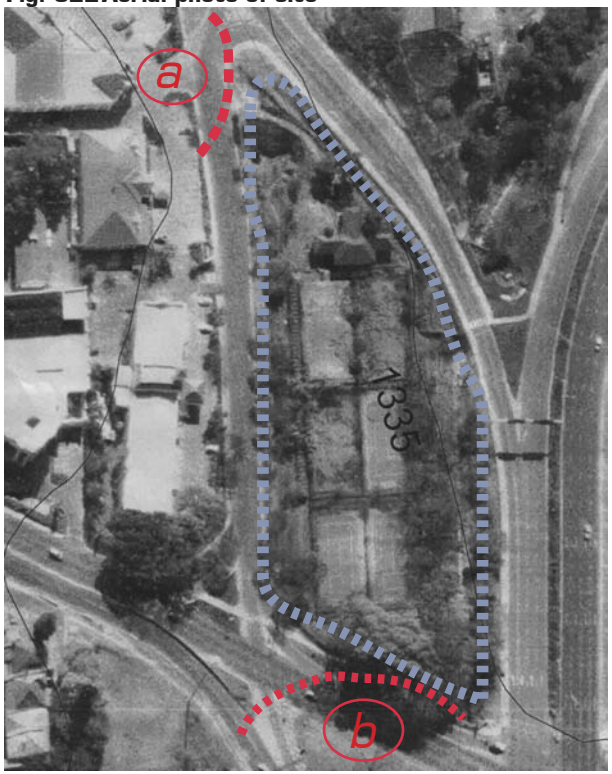


Fig. 021 Land use typologies

Fig. 022 Aerial photo of site



SITE CONTEXT

LOCATION:

The chosen site is situated on the corner of Willow Street and nelson Mandela drive, in the Berea precinct. Van der Walt Street and Clara Street form the northern and western boundary of the site respectively. The site falls in the green belt development due to the fact that the Apies River runs through the site.

MICROCLIMATE:

Due to the fact that the site is situated on the riverbank, the area will have extensive evaporation and transpiration areas, which means that the site will have a slightly cooler climate and smaller temperature fluctuations than areas not in close proximity of the river.

VEGETATION:

The vegeation on site is more of a moist biome than the rest of the city (which is a transition from grass to "bosveld" biome), due to location on the banks of the Apies River. Species like Celtis Africana (white stinkwood), kiggelaria Africana (Wild peach), Halleria Lucida, Leucasidea sercea is found in this area.

VISUAL CHARACTERISTICS:

Topographically the site is situated in the floodplains of the Apies River. The direct surroundings are built up with structures that vary in height. Salvokop and UNIsa ridge forms the main south view of the site, whilst Berea Sports Park and Nelson Mandela drive forms the north-western view. The views to the east are obstructed by the Berea park development and high-rise buildings form the northern horizon.

Fig. 024 Panoramic view of the site from the north

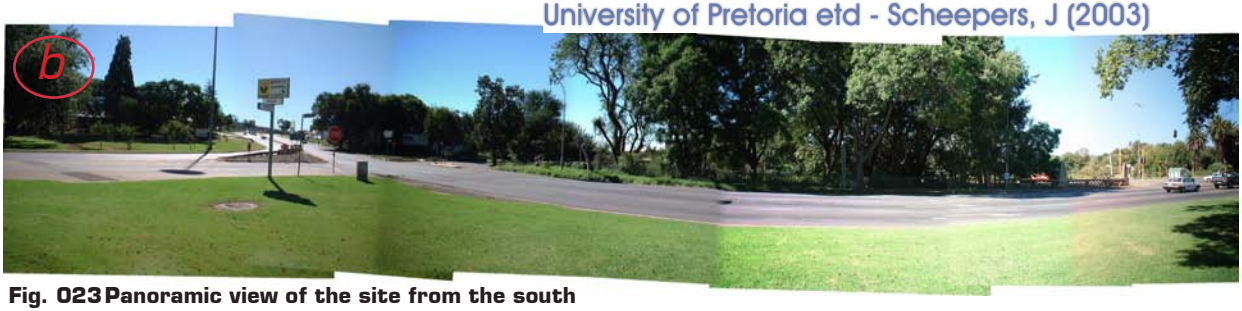


Fig. 023 Panoramic view of the site from the south

HYDROLOGY:

Pretoria falls in the Limpopo-Olifants drainage region and in the Apies/Pienaars river catchment area. This area falls in the Upper Limpopo River Catchment system and consists of the following rivers: Apies River, Pienaars River, Moretele River, Kutswane River, Tolwane River and the Plat River.

Fed by a huge system of dolomitic caverns south of the city centre, the Apies River originates at two fountains consistently delivering about 26 megalitres per day. The lower part of the Apies river is named Tswane River. Tswane river joins the Pienaars river beyond Makapanstad. At the confluence the river is named the moretele River which joins the Crocodile River and which eventually runs into the Limpopo River.

TOPOGRAPHY:

The river cuts in a north-south direction through the east-west running ridges (Salvokop and UNISA, Witwatersberg at Daspoort and Magaliesberg at Wonderboompoort). Due to the topography the urban grain and structure is orientated in an east-west direction.

GEOLOGY:

It consists of Andesitic lava [T3dL] that weathers normally into a deep red loamy soil. This can be covered or mixed with silt that originated from sedimentations from the Apies River [purnell 1994]. Shale [T3dS] that weathers into clay also occurs on the riverbeds. This shale rock is usually encountered at a depth of 2m. At this depth the rock is soft, becoming harder with depth, being medium hard at a depth of 4m. This implies suitable founding conditions for minor and major structures as regards bearing capacity. The impermeable nature of shale creates problems in the operation of French drains in peri-urban and rural areas in the Pretoria district [Brink 1997].

CLIMATE:

Climatic Zone:

Pretoria falls in the Northern Steppe Climatic zone.

Description of the zone

Distinct rainy and dry seasons exist with a large daily temperature variation and strong solar radiation. Humidity levels are moderate.

Temperature:

The maximum diurnal variation occurs in July. The average monthly diurnal variation is 13K.

Summer: average max. 28,6°C January
[Extreme 42°C]
Average min. 17,4°C
[Extreme 8°C]

Winter: average max. 19,6°C July
[Extreme 31°C]
Average min. 4,5°C
[Extreme -7°C]

Relative humidity: dry winter months: 20-55%
Vapour pressure: 1.3 - 1.6kPa

Humid summer months: 55-95%
Vapour pressure: 2.0 - 2.5kPa

The average monthly relative humidity level is 59%

Climatic data for Pretoria

Jan	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
Maximum average monthly temperature (°c)	28,6	28	27	24,1	21,9	19,1	19,6	22,2	25,5	26,6	27,1	28	24,81
Minimum average monthly temperature (°c)	17,4	17,2	16	12,2	7,8	4,5	4,5	7,6	11,7	14,2	15,7	16,8	12,13
Average monthly amplitude (K)	11,2	10,8	11	11,9	14,1	14,6	15,1	14,6	13,8	12,4	11,4	11,2	12,68
Average monthly relative humidity (%)	58,0	59,5	60,0	59,5	55,0	53,0	50,0	46,0	45,0	49,5	54,0	56,5	53,83
Average monthly rainfall (mm)	136	75	82	51	13	7	3	6	22	71	98	110	56,17
Rham 72	74	76	78	76	75	71	64	61	64	68	70	75	70,75
Rhpm 44	45	44	41	34	31	29	28	29	35	40	43	44	36,92

Fig. 025 Climatic data for Pretoria

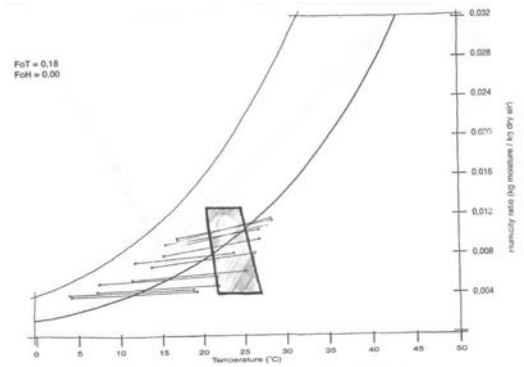


Fig. 026 Psychrometric chart showing the comfort zone's position relative to the climatic lines

Sunshine:

Pretoria experience intense sunshine in the summer with 60% of the days being sunny. In the winter the intensity is less but 80% of the days are sunny.
Sun angles: summer extreme 89° [05h14 - 18h45]
Winter extreme 41.7° [06h53 - 17h19]

Wind:

Summer winds are predominantly east-north-easterly to east-south-easterly. Winter winds are predominantly south-westerly with a fair amount originating from the north-east.
It is persistent towards the end of the dry season [August]. Very dusty during dry winter months.

COMFORT ZONE

Temperature

Summer temperatures extend approximately 3K above the comfort zone. Winter temperatures extend to approximately 15K below the comfort zone.

Humidity

Humidity levels are moderate and are not considered problematic.

PLANNING

Urban

Protection of pedestrians by trees, arcades or canopies. South facades of street receive high radiation during summer and should be tree lined.

Plan form

Winter and summer requirements differ. The winter demands include a compact plan form, a well-insulated envelope, and solar gain is desirable.

Position of functions

External spaces should provide shade in summer for outdoor activities. Place buffer zones west and south.

Rain protection

It will be convenient to shield entrances from sporadic thunderstorms.

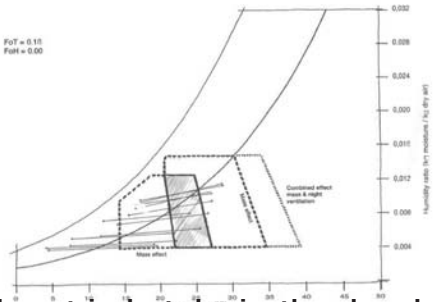


Fig. 027 Psychrometric chart showing the enlarged comfort zone obtained by supplying thermal mass to the structure. The combined effect of ventilation and thermal mass is also shown.

BUILDING ENVELOPE

Mass

Thermal mass is effective for approximately half of the under heated period and the entire overheated period. Thermal mass is also advisable especially in inland areas where the daily temperature swing is larger than 13K. It can be provided by massive floors, roofs and internal partitions. It is effective for approximately half of the under heated period and for the entire overheated period.

Insulation

Lightweight insulated roofs are feasible in this region provided that walls and floors give thermal mass.

Properties of materials

External surfaces should be light coloured or reflective to minimize solar heat gain in the overheated period.

SOLAR CONTROL

Sun angles

It is recommended that summer sun be screened and winter sun be allowed to penetrate.

VENTILATION

Ventilation is effective for the overheated period. Night ventilation can be used to compensate insufficient mass.

MANAGEMENT:

Opening of windows if night ventilation is feasible.

SYSTEMS:

Evaporative cooling:

Direct evaporative cooling is effective for most of the overheated period.

Active:

Air-conditioning is not a necessity, but the building function may require it.

Mechanical:

Mechanical ventilation may be necessary to achieve the required ventilation rates.

University of Pretoria etd - Scheepers, J (2003)

Up to 200 000 years ago

Early, Middle and Late Stone Age communities inhabited the Pretoria region. They manufactured stone tools and weapons from quartzite rocks of the Magaliesberg and obtained water from the Apies River.

AD 1200

Earliest evidence of settlement by black communities in Pretoria. They grew crops, kept domesticated animals, made pottery and smelted iron

1825-1826

The Matabele tribe conquered the Bakwena tribe and, led by their chief Mzilikazi, settled along the Magaliesberg (the Cashane).

Late 1830s/ early 1840s

First Voortrekkers (such as the families of Lukas and Johannes Bronkhorst and Andries van der Walt) settled along the Apies River. Pretoria established, Church Square laid out on higher ground in the elbow of the Apies River.

1857

First appearance of the name Apies River on a map - then named Aap River, referring to the thousands of vervets (Cercopithecus aethiops) on the banks.

1858

Water furrow taken from the Fountains to central Pretoria with furrows running along the main streets.

1870s

First large plots established on the banks of the Apies River, east of Du Toit Street and north of Boom Street.

brief: site analysis heritage

1894 *Completion of Lion Bridge at Church Street crossing.*

1899 *Winston Churchill, then special correspondent to the British newspaper The Morning Post to cover the Anglo-Boer War, crossed the Apies River on the Skinner Street footbridge in the night of 12 December, after his famous escape from the Staatsmodel School.*

1909 *Huge damage of property and loss of life when the Apies River is transformed into a raging torrent after a heavy rainstorm in January. Work started on the canalisation of the river, beginning at Proes Street and working upwards to the south. The work lasted until the late 1930s.*

1912 *Row of date palms planted along Apies River.*

1923 *Bon Accord Dam completed.*

1937 *Wall of the Bon Accord Dam nearly collapsed after heavy rain.*

1994 *Magaliesberg Protected Natural Environment established with Apies River running through Wonderboom Poort (known during the 19th century as Tweede Poort).*

1995 *Action Apies River (AAR) established as a forum for the revitalisation of the Apies River.*

1999 *Five informative plaques erected at historic bridges over the Apies River.*

[Barbir 1999]

Site:

The sport field and social club, Berea Park, was established as a direct result of the development of sport in Pretoria. Originally Church Square was the first place where sport enthusiasts played ruby and cricket, but time and again they were interrupted by the Communion tents who would camp for weeks on Church Square. The solution closest to Church Square was Burgers Park, but after redevelopment, the fields allocated for rugby and cricket were only the size of about two tennis courts.

They then allocated a piece of ground next to the Apies River for sport fields. Cricket matches were played here even before the first English team visited Pretoria in 1888. Soon it became one of the biggest sport fields in the city, even though Caledonian sport stadium also existed by then. With the English's second visit in 1892, the locals were allowed to have a 22-man team; this didn't help because they lost the game by an innings and 29 runs.

Berea Park was also the social gathering place of the time. The first South African motorcar, a Benz with 1,5 horsepower, was displayed here in 1894.

It became the South African Railways club in 1902. The current building was erected in 1907 and additions took place in 1926 and 1937. Today it houses the Berea park high School.

In recent years Berea Park was divided into two parts when a slipway was constructed to give access from Nelson Mandela Drive to Van der Walt Street. This southern portion [the chosen site] was used as Berea tennis club. In 1890 this southern portion was a watermill and later became a lemonade factory. Today it stands desolate and unattended. The course of the Apies River was changed from a sharp elbow, running through the site, to a straight line running through the right edge of the site, when it was channelled in 1908.

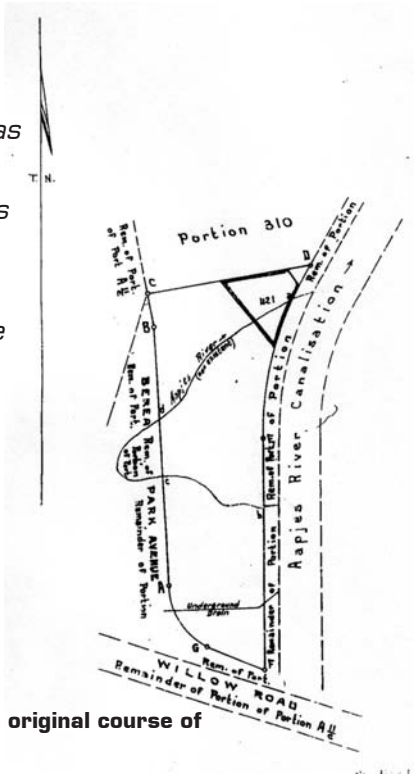


Fig. 028 Site plan showing the original course of the Apies River

FACULTY OF ECONOMICS AND MANAGEMENT, UTRECHT, THE NETHERLANDS.

Two orders of space - large public facilities and repetitive ranks of classrooms and offices - are laid out to form a series of quadrangles in this academic building. Within this framework, material and formal manipulations transform the typology, resulting in a building that is far from traditional.

The rich material character of this building is highly articulated in the facades that are frequently layered to reconcile the conflicting demands of internal programme and external context. The cladding of the building is economically achieved by a simple, regular curtain wall, which provides the weather tight enclosure. Visual and tactile richness is found in an outer layer that, liberated from the obligations of plan, section and weather, is freely configured and ambiguous in scale.

The public functions of the building are displayed by the two-storey bar along the street, whilst the lecture halls are clad in different materials, ranging from ordinary expanded metal mesh to finely finished wood.

In other areas of the building, form and material are deployed to enhance sensory experience. The courtyards are tactile spaces, where architecture and landscape combine to create spirited, open-air public rooms of great character. The Zen court, inspired by Japanese meditation gardens, is static in nature. In contrast, the water courts reflect changing weather and seasons and are in a state of flux. The plans of the quadrangles are distorted, a particularly effective device in the exaggerated perspective of the water court, which tapers virtually to a single viewpoint at its north end while opening to the south. The preoccupation with landscape is internalised by ramped corridors of classrooms and dramatic stairways that shoot obliquely across voids to from an unexpected interior topography.

Architect: Mecanoo
[Le Cuyer, 1995]

Fig. 029

Fig. 030

Fig. 031

Fig. 029, 030, 031 **Faculty of Economics and Management, Utrecht, Netherlands**

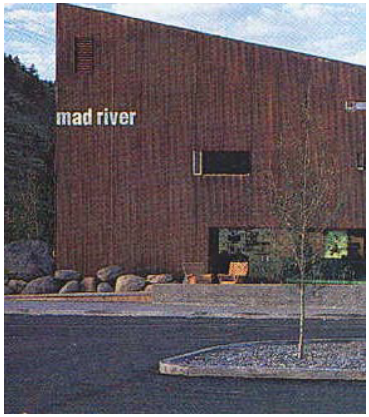


Fig. 032

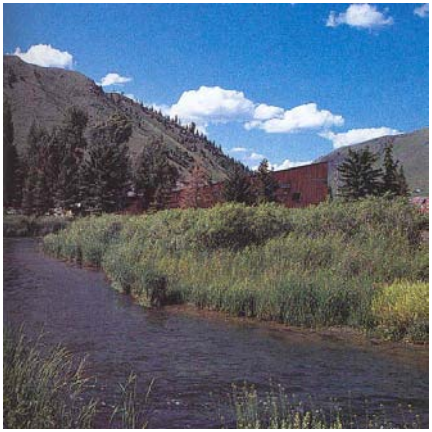


Fig. 033

Fig. 034

RAFTING CENTRE, JACKSON, WYOMING, USA

Using elemental simplicity with tectonic inventiveness the architect designed a rafting centre that runs rafting tours of the Snake River. It is designed to house the company and its associated activities. A menacing wedge-like form clad in rusted steel, the building recalls the vernacular ranch and services structures of the Wyoming landscape and create a totemic landmark in an ordinary commercial highway strip.

Arranged within in this volume are a warehouse for clothing and equipment storage, retail space, a small museum documenting the history of the river and a bunkhouse for the guides who supervise the expeditions.

Basic timber-frame technology and functional materials were used in the construction of the building. The tall east end of the building is fully glazed, exposing the shop's wares and the museum's collection, rafts and canoes, which are slung from the ceiling. Meticulously detailed timber and steel trusses support this tall glass wall.

The architect's concern for users and context can be seen in his use of materials: walls and roof are wrapped in a skin of rusted corrugated steel sheeting, which gives the building a monolithic industrial quality.
Architect: William P. Bruder
[Architectural Review, April 1997]

Fig. 032, 033, 034 Mad River Rafting Centre, Wyoming
[Architectural Review, October 1998 pg. 66-67]

RECREATIONAL EQUIPMENT INC., SEATTLE, WASHINGTON.

The sound of knobbly tires slicing across gravel breaks the silence as a mountain biker cuts through the grove of cedars, brakes to manoeuvre a hairpin curve, crosses a series of hard bumps, and shifts gears to climb a steep hill.

Normally this weekend activity is not an unusual event in Seattle, but this mountain biker is traversing no ordinary mountain biking course: this one is in the heart of the city.

REI has not only taken the concept of interactive retail to the limit, but by doing so they have revived the city by bringing outdoor sports and nature back to the city centre. The space is filled with energy and a sense of enjoyment to be derived from spending time in such a lively public setting.

The mountain bike test track and the 21 000-square-foot urban forest that embraces it where designed to be some type of street corner wilderness. It was not an easy task; trying to invent a new aesthetic and reconciling the tenuous relationship created by taking plants from fragile habitats and placing them in a dense urban environment. The outdoor space was placed on the southwest corner of the site to provide the plants with good sunlight and to protect them on the side of the building opposite a busy highway. Here is also a visual connection to the city. The basement is designed is such a way that the shoppers don't emerge from it through tunnels or holes, as they would in many retail spaces, but they are immersed in the outdoor space as they enter the building.

The landscape architects sought to achieve a spirit of adventure and discovery on the site. The site's most prominent element is a waterfall that funnels rainwater from six drains on the building roof and recirculates it. The water crashing down acts as a white noise masking the freeway noise next to the site.

The store is organised to reflect REI's evolving emphasis on five 'speciality' shops: camping, mountaineering, skiing, kayak and canoeing and bicycling. The concept of this store is that the shoppers can have a hand-on experience. So rock climbing shoes can be tested on a 65ft climbing pinnacle, boots and mountain bikes on a 470-ft outdoor trail; rain gear in a glass-enclosed room that mimics Seattle's infamously wet weather; and camp stoves on a aboratory-like vented hood.

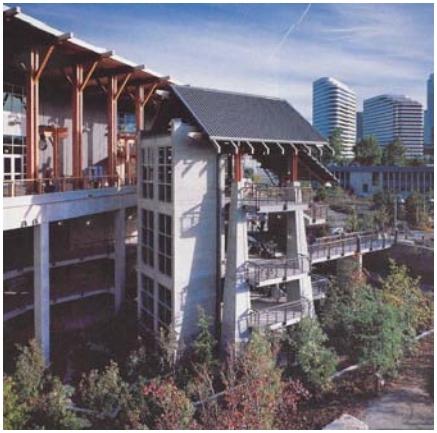


Fig. 035

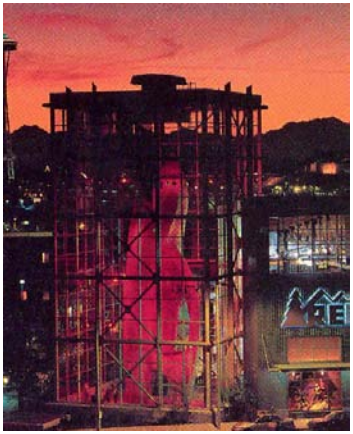


Fig. 036

Fig. 037

In keeping with REI's green goals, about 75% of the demolition debris was reused in the new building, recycled or sold for salvage. Retail-area countertops were made of recycled newspaper and soybean composite; bathroom countertops of waste wood composite. To meet energy consumption considerations, the interior temperature is permitted to vary by as much as 5° throughout the store [most retailers seek a 1° variance]. The stack effect draws excess heat out the top of the building; both techniques allow a lower HVAC system. The clerestory windows are clear glass, rather than low-emissivity glass, to help heating the space. Shades prevent heating on sunny days.

Workshops, ranging from tent care to climbing techniques, are held in a space designed as a place of escape where a person can also come and enjoy a quiet lunch. In selecting the plants and their placement, the architect sought to achieve a balance between enclosing the spaces and creating a penetrable edge.
Architect: Mithun Partners
[Architectural Record, March 1997].

Fig. 035, 036, 037
Recreational Equipment Incorporated
[Architectural Record March 1997,
pg. 96-98]

RIVER IN THE CITY, PORTLAND, OREGON.

The new Eastbank Esplanade in Portland is situated on an abandoned and neglected industrial site across the Willamette River from downtown Portland, adjacent to a still active industrial area. The development is squeezed in between the river and the noisy interstate.

In 1993, a design team was commissioned to develop a master plan for the entire east bank of the river. The planning included numerous state and local agencies, as well as many citizen and community organisations. The plan advocated a number of key ideas, many of which have since been implemented. The park connects two major attractions: the Oregon State Convention Centre at the north end and the Oregon Museum of Science and Industry at the south end. A continuous pedestrian/bicycle loop around both sides of the downtown riverfront, with connections into adjacent neighbourhoods was proposed. It would place people in close contact with the water and its riparian environment and it would restore the natural habitat.

A major aspect of the Eastbank design embraces the notion of environment education. Along the esplanade distinctive urban markers were placed at intervals corresponding with the city street grid. Constructed of tapered steel with exposed rivets, the pylons are topped with flared caps. The base of each incorporates a large plaque with photographs and text that tell stories about the aspects of the history and ecology of the river.

The design offers a continuous, meandering esplanade for jogging, strolling and biking. According to the landscape architects, Mayer-Reed, Eastbank Park is really more of an urban trail, but one that has park-like elements along it. The experience of walking along it is both visual and visceral. It offers a constantly shifting spectacle of urban and natural forces - contrasting the economy of the city with the ecology of the river. The panoramic sweep of buildings and bridges, trains and ships and shoreline and habitat presents a new way to see the city, imparting ideas about both culture and nature.

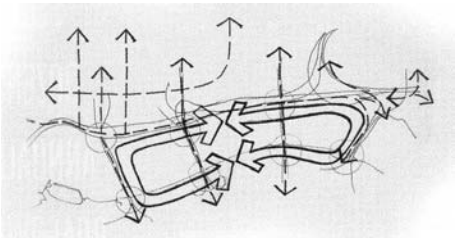


Fig. 038

Fig. 039

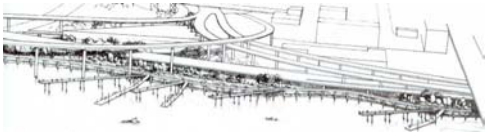


Fig. 040

Fig. 038, 038, 040 River in the City, Portland, Oregon
[Landscape Architecture, October 2001, pg. 68, 71]

The design of the building in terms of its context, function, form and materials must enhance the sensory experience of the place and create tactile spaces. The outdoors must be expressed indoors. The visual will become a reminder; therefore the design must focus on creating, directing and anticipating views.

By integrating the design with its context and site, the abandoned and neglected natural elements will be enhanced and used as a connection point between urbanity and ecology, contrasting the hard landscape of the city with the ecology of the green belt.

brief: accommodation schedule

09. Accommodation schedule			
	Type of area	Name of area	Reference
09.a.1	Public area:	Entrance & reception	09.c.1
		Retail: Cycling	09.c.2
		Retail: climbing&outdoors	09.c.3
		Retail: kayak & canoes	09.c.4
		Workshops	09.c.5
		Exhibition space	09.c.6
		Coffee shop	09.c.7
09.a.2	Semi-public area :	Changing room, showers & toilets	09.c.8
09.a.3	Semi-private area :	Adventure Zone TV studios	09.c.9
		Deliveries & storage	09.c.10
		workshop for fitment and fixing of bikes	09.c.11
09.a.4	Private area:	Offices & meeting room	09.c.12

Class of occupation of building		
	Class of occupation	Occupation
09.b.1	A1	Entertainment & public assembly
09.b.2	C1	Exhibition hall
09.b.3	F1	Large shop
09.b.4	G1	Offices
09.b.5	B2	Commercial services, medium risk

Name of area:	RETAIL: CYCLING	
Area needed	Workshop	50m²
	Retail & fitment	250m²
Description	Area required for the display of the latest cycling equipment, especially the displaying of bicyles. For flexibility the main structural grid is likely to be between 5.4m- 6m, with 5,4m considered to be the optimum [Adler 1999: 133].	
Fire regulations	According to part TT37.5 of the National building regulations [SABS 0400: 1990: 193]the number of portable fire extinguishers relative to the floor area in retail space must be 1 per 200m². Any building including an opening occupied by by a stairway or escalator not forming part of an escape route, shall not connect more than two storeys if such building is not protected by a sprinkler system. The need for wide open spaces conflicts with the requirement for fire compartmentation. Max. compartment sizes: 2000m², with twice these figures if an automatic sprinkler system is installed.[Adler 1999: 133]	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 7,5 l/s per person. The daylight requirements of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	**Norms and standards**	**Performance criteria**
Media projector	According to specific needs	This equipment will be used to play continuous video clips of mountain biking or other relevant media. It will be used as a marketing tool for the specific speciality retail area.
TV screens	According to specific needs	
Hi-Fi system	According to specific needs	
Mountain bike test track	Min. width: 1000-1500mm. According to specialist's specifications.	This track must be designed to cater for all types of mountain bikers, from the beginner to the pro. It will be used to create spectator value, in the building, as well as pedestrians passing by the site. Will also be used to promote the sport by having anual sponsored races or time trials.
Storage and display racks for clothing	Max. height: 1350mm ; max. width: 600mm; 2600-3600mm radius. [Adler 1999:132]	Due to the nature of the sports wear special designed racks will be needed.
Shelving	Max. height: 1150mm ; max width: 800mm. [Adler 1999:132]	Due to the nature of cycling accessories special designed shelving will be needed.

brief: accommodation schedule

Name of area:	RETAIL:CLIMBING & OUTDOORS	
Area needed	Retail and display	250m²
	Rain room	6m²
	Cold room	6m²
	Climbing wall	144m²
Description	Area required for the display of the latest climbing, hiking and camping equipment, especially the display of tents and climbing ropes. For flexibility the main structural grid is likely to be between 5.4m- 6m, with 5.4m considered to be the optimum [Adler 1999: 133].	
Fire regulations	According to part TT37.5 of the National building regulations [SABS 0400: 1990: 193]the number of portable fire extinguishers relative to the floor area in retail space must be 1 per 200m². Any building including an opening occupied by a stairway or escalator not forming part of an escape route, shall not connect more than two storeys if such building is not protected by a sprinkler system.The need for wide open spaces conflicts with the requirement for fire compartmentation. Max. compartment sizes: 2000m², with twice these figures if an automatic sprinkler system is installed.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 7,5 l/s per person. The daylight requirements of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	Norms and standards	Performance criteria
Media projector	According to specific needs	This equipment will be used to play continuous video clips of adventure races, climbing or other relevant media. It will be used as a marketing tool for the specific speciality retail area.
TV screens	According to specific needs	
Hi-Fi system	According to specific needs	
Rain room	According to specialist's specifications	Will have a specialised system that recycles rainwater to create the effect of rain in this room.
Cold room	According to specialist's specifications	Wil have a a specialised system to create temperatures of below 0°C.
Climbing wall	According to specialist's specifications	This Climbing wall must be designed to cater for all types of climbers, from the beginner to the pro. It will be used as an architectural element in the design of the building and to create spectator value, in the building, as well as pedestrians passing by the site. It willl also be used to promote the sport by having anual sponsored climbing events and it will be used in the leadership and youth programs.
Storage and display racks for	Max. height: 1350mm ; max. width: 600mm; 2600-3600mm radius. [Adler 1999:132]	

Name of area:	RETAIL: KAYAK & CANOES	
Area needed	Display and retail	250m²
	Kayak test run	120m²
	Canoe test run	150m²
Description	Area required for the display of the latest rowing equipment, especially the display of kayaks and canoes. For flexibility the main structural grid is likely to be between 5.4m- 6m, with 5,4m considered to be the optimum [Adler 1999: 133].	
Fire regulations	According to part TT37.5 of the National building regulations [SABS 0400: 1990: 193]the number of portable fire extinguishers relative to the floor area in retail space must be 1 per 200m². Any building including an opening occupied by by a stairway or escalator not forming part of an escape route, shall not connect more than two storeys if such building is not protected by a sprinkler system.The need for wide open spaces conflicts with the requirement for fire compartmentation. Max. compartment sizes: 2000m², with twice these figures if an automatic sprinkler system is installed.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 7,5 l/s per person. The daylight requirements of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	Norms and standards	Performance criteria
Media projector	According to specific needs	This equipment will be used to play continuous video clips of kayaking and canoeing or other relevant media. It will be used as a marketing tool for the specific speciality retail area.
TV screens	According to specific needs	
Hi-Fi system	According to specific needs	
Kayak test run	According to specialist's specifications. Allow space for the wave machine. Length of pool: 25-100m to accommodate for a 0.5-1.5m high wave. [Adler 1999:206]	The test runs must be designed to cater for all types of rowers, from the beginner to the pro. It will be used as an architectural element in the design of the building by diverting water from the Apies River and running the canal through the building. Also to create spectator value, in the building, as well as for pedestrians passing by the site. It will also be used to promote the sport by having annual sponsored rowing time trials and using it in the youth programs.
Canoe test run	According to specialist's specifications. Allow space for the wave machine. Length of pool: 25-100m to accommodate for a 0.5-1.5m high wave. [Adler 1999:206]	
Storage and display racks for clothing	Max. height: 1350mm ; max. width: 600mm; 2600-3600mm radius. [Adler 1999:132]	Due to the nature of the sports wear special designed racks will be needed.
Shelving	Max. height: 1150mm ; max width: 800mm. [Adler 1999:132]	Due to the nature of rowing accessories special designed shelving will be needed.

brief: accommodation schedule

Name of area:	**WORKSHOPS/EDUCATIONAL PROGRAMS FACILITIES**	
Area needed	50m²	
Description	Situated on ground floor, in close proximity of the climbing wall as it will be part of the activites.	
Fire regulations	According to part TT37.5 of the National building regulations [SABS 0400: 1990: 193]the number of portable fire extinguishers relative to the floor area in a space must be 1 per 200m². Any building including an opening occupied by a stairway or escalator not forming part of an escape route, shall not connect more than two storeys if such building is not protected by a sprinkler system.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 7,5 l/s per person. The daylight requirements of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	**Norms and Standards**	**Performance criteria**
Media projector	According to specific needs	This media will be used in the training and educational programs.
TV screens	According to specific needs	
Hi-Fi system	According to specific needs	
Name of area:	**EXHIBITION SPACE**	
Area needed	50m²	
Description	The space will consist of 5 or 6 different areas: an area for each speciality shop and an area for the reception area.	
Fire regulations	According to part TT29.1 of the National Building Regulations [SABS 0400 1990:198], escape routes in a building should be clearly marked.Any portal of foyer forming part of an escape route, must be the combined width of all escape routes that end in that foyer, or 33% wider than the basis of the population that must pass through it, whichever one is the biggest.Any exhibition that might take place in such a foyer must be fixed and should not protrude more than 150mm into the foyer.	
Lighting and ventilation	The source should be isolated from the exhibit so that maintanance can be carried out without breaching security. The exhibits should also be protected from the heat of the lighting. According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 6,5 l/s per person.	
Facilities required:	**Norms and Standards**	**Performance criteria**
Media projector	According to specific needs	This media will be used to screen video clips of relevant historical events. The sound and media system must be designed in such a way that it won't cause a disturbance to the rest of the retail space. The daylight requirements of this area is 300 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]
TV screens	According to specific needs	
Hi-Fi system	According to specific needs	

Showcases and/or plinths and/or panels to display objects	Max. height: 1900-2000mm [showcase]; max. height: 750-950mm [plinth].	Adequate space should be provided for people to view the exhibits. Text and captions should be of a type size relative to the distance from the viewer.

Name of area:	**COFFEE SHOP**	
Area needed	50m²	
Description	On ground floor, connecting the retail space, reception and outdoor activity area.	
Fire regulations	According to part TT37.5 of the National building regulations [SABS 0400: 1990: 193]the number of portable fire extinguishers relative to the floor area in a area must be 1 per 200m².	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 7,5 l/s per person. The daylight requirement of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	**Norms and Standards**	**Performance criteria**
Media projector	According to specific needs	This media will be used to screen live television broadcasts. The sound and media system must be designed in such a way that it won't cause a disturbance to the rest of the retail space.
TV screens	According to specific needs	
Hi-Fi system	According to specific needs	
Work area	Min. width [two people working back to back]: 1200mm. [Adler 1999: 171]	N/A
Service counter	Min. width: 700mm. [Adler 1999: 171]	
Seating	Min. spacing between tables: 900mm. [Adler 1999: 166]	

University of Pretoria etd - Scheepers, J (2003)

Name of area:	OFFICES	
Area needed	Manager	8m²
	Secretary	6m²
	Assistant manager: cycling	6m²
	Assistant manager: climbing and outdoors	6m²
	Assistant manager: kayak & canoes	6m²
	Meeting room	6m²
	Cleaning staff & storage	6m²
	WC's	4.5m²
Description	Situated on the top floor, location of offices should be seperated from retail activites.	
Fire regulations	According to part TT37.5 of the National building regulations [SABS 0400: 1990: 193]the number of portable fire extinguishers relative to the floor area in a area must be 1 per 200m².	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 5 l/s per person. The daylight requirements of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required per office:	Norms and Standards	Performance criteria
Personal computer	According to specific needs	N/A
modem point	According to specific needs	
telephone	Private automatic branch exchange [PABX] system. All incoming calls via operator, outgoing calls direct dialled.	

Name of area:	ADVENTURE ZONE TV STUDIOS	
Area needed	Equipment area	20m²
	Master control room	
	Storage	
Description	Should be accessible for public for viewing. This won't be a broadcasting studio, but only a production studio.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 5 l/s per person. The daylight requirement of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	Norms and Standards	Performance criteria
Sound proof rooms	The acoustic standards to be achieved should be identified by the specialist consultant and agreed with the client at the outset. Permissible background noise level: 25-8 dB.[National Noise regulations SABS 0103]	Specific designed walls, doors, windows and floors to accommodate the acoustic needs of the space.

Name of area:	DELIVERIES AND STORAGE	
Area needed	200m²	
Description	Situated away from public activities, easy access from road.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 5 l/s per person. The daylight requirement of this area is 100 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	Norms and Standards	Performance criteria
Refuse area	According to part U1 of the National Building Regulations [SABS 0400 1990:221], a storage place for refuse bins must be provided. This storage space must be accessible from the road	Sufficient area for the sorting of refuse into glass, paper, tin and other categories must be provided.

brief: accommodation schedule

Name of area:	Workshop for the fitment and fixing of bikes	
Area needed	50m²	
Description	Situated away from public activities, in close proximity of the mountain bike speciality shop.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 5 l/s per person. The daylight requirements of this area is 1000 lux [Setting/assembly/fitting].[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	Norms and Standards	Performance criteria
Worktops	Max. height: 1150mm ; max width: 800mm. [Adler 1999:132]	N/A
Shelving	Min. height: 1150mm ; Min. width: 300mm [Adler 1999: 20-38]	Designed to accommodate manual and electrical tools.
Work space		Area must be able to store bicycles, canoes and kayaks.

Name of area:	CHANGING ROOMS, TOILETS AND SHOWERS						
Area needed	60m²						
Description	Situated on ground floor, easy accessible from outdoor activities						
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 20 l/s per shower, wc pan, urinal or 600mm- urinal space.						
Facilities required:	Males				Females		
	WC pans	urinals	Washbasins	Showers	Wc pans	Washbasins	Showers
	4	5	5	5	9	5	5
Provision for the disabled	According to part SS 5.1[b] of the National Building Regulations [SABS 0400 1990:154], separate toilet facilities must be provided; 5.1 [c] states that the disabled person will not have to travel more than 200m in order to reach the facilities. According to part SS 5.2 [b] the minimum required area for the facilities is 2,9m² and a minimumplan dimension of 1,6m.						

brief: accommodation schedule

Building analysis: Accommodation schedule		
Name of area:	**RECEPTION**	
Area needed	60m²	
Description	60m²	
Fire regulations	According to part TT29.1 of the National Building Regulations [SABS 0400 1990:198], escape routes in a building should be clearly marked.Any portal of foyer forming part of an escape route, must be the combined width of all escape routes that end in that foyer, or 33% wider than the basis of the population that must pass through it, whichever one is the biggest.Any exhibition that might take place in such a foyer must be fixed and should not protrude more than 150mm into the foyer. According to part TT 16.2 the max. distance to an escape route in the building must be 45m; if the distance is more than that two escape routes must be provided with emergency exits as part thereof.	
Lighting and ventilation	According to part OO7[b] of the National Building Regulations [SABS 0400 1990:112], the ventilation required for this type of occupancy is 5 l/s per person. The daylight requirements of this area is 200 lux.[According to Van Rensburg, Department of Architecture University of Pretoria, Earth Sciences 320 Study Guide, 2001]	
Facilities required:	**Norms and standards**	**Performance criteria**
Counter, suotable for writing.	Min. height: 1150mm ; Min. width: 300mm [Adler 1999: 20-38]	Should be visible to clients immediately on entry, should also serve as an information desk.
Accounting equipment and computer	According to specific needs	N/A
Telephone system	Private automatic branch exchange [PABX] system. All incoming calls via operator, outgoing calls direct dialled.	N/A