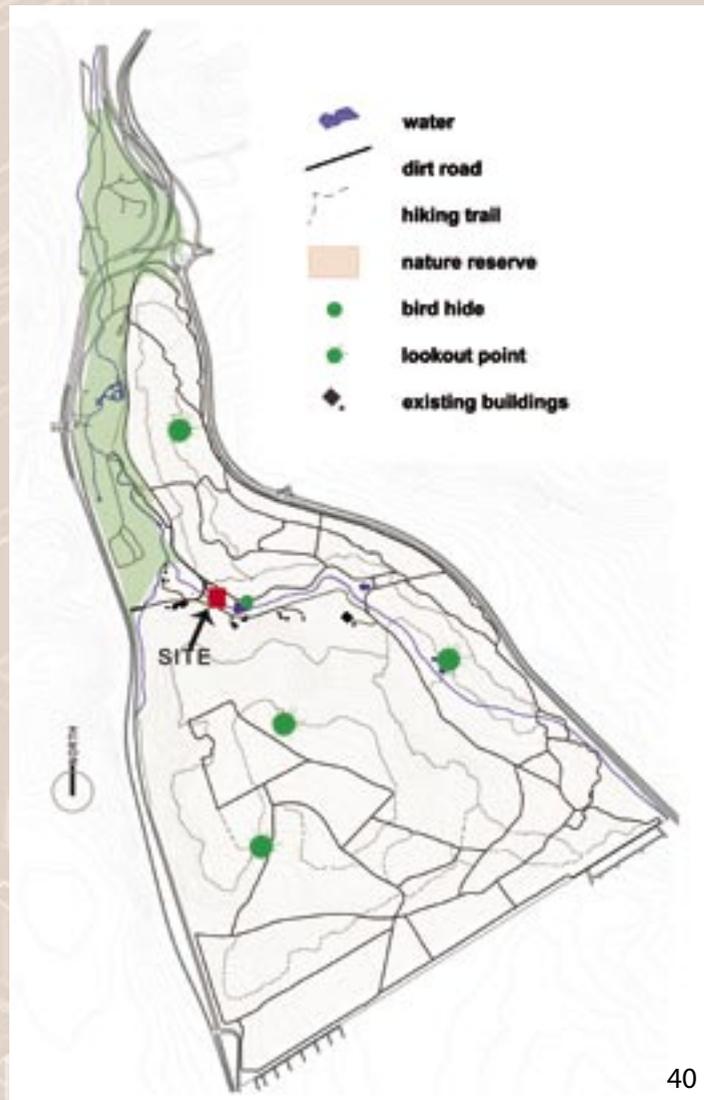


4: Design discourse

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4.1 The design intervention

Humanity is becoming increasingly aware of the earth's finite support capacity and so all fields of design have turned their focus to the preservation and appreciation of our natural surroundings. The interaction between nature and human development is a struggle frequently confronted by designers, and attempts to effect a balance between the two are very evident in modern architecture. Although there are many schools of thought on this issue, the ideal solution remains elusive.

Contemporary literature on this interface and the research undertaken into significant precedents has laid the basis for the concept and development of the *Interactive Visitors Centre*. The two driving questions behind the project are whether manufactured artefacts should mimic nature in order to blend into the natural landscape, or if a new architectural language would serve to promote awareness of conservation by way of its interaction with, and contrast to, the natural setting.

In the decision-making process, two essential factors determined the outcome of the design. These imperatives are based on the dynamics that typically occur in a visitors centre. The users' needs are the primary concern. Secondly, the interaction of the physical context with the *Interactive Centre* must be considered. This interaction takes into account the tangible and intangible attributes of the design (cf. 1.7).

4.2 Macro site development

A proposal for the entire Groenkloof Nature Reserve forms an important part of this project. This proposal should reflect the same design principles that apply to the Centre and focus on the conservation of the landscape.

4.2.1 STRUCTURE

The concept behind the decision to construct new bird hides and lookout points in the reserve is that the visitor's attention is focused on the fauna and flora around him/ her and that this is experienced as pleasant and relaxing. The location of the structures (Figure 40) was identified by the author

after conducting interviews with frequent visitors to the GNR. Lookout points are shaded resting points for cyclists and hikers and need to be well sign-posted to orientate the visitors. To protect the plant species that are presently being rehabilitated and the newly introduced wildlife, lookout points and bird hides within the reserve should be designed with minimal ecological footprint and the least possible hindrance to the game. With this in mind the enclosures should as far as possible be constructed out of recyclable materials that are readily found in the area; these will merge visually with the environment. This approach has proved valuable for educational purposes, as the wildlife remains undisturbed in its natural habitat while being viewed unnoticed through permeable visual barriers between the animal and the visitor.

4.2.2 SIGNAGE

Comprehensive maps are necessary at the identified points in the reserve (Figure 40). These points are strategically positioned in elevated parts of the reserve to provide the visitor with striking views of the surrounding countryside. Among the other lookout-point structures, suitable signage should enrich the visitor's experience and understanding of the GNR by providing useful information (Figure 41).

4.2.3 HERITAGE-HIKING TRAIL

A heritage-hiking trail, also proposed by Küsel (2006:15) is to be implemented as a part of the *Interactive Centre* macro site development. The trail will start at the Centre and will include all the relevant monuments in the Fountains Resort and GNR. Pertinent lookout points, that offer a view of the Voortrekker Monument and Fort Klapperkop, should be included in the trail.

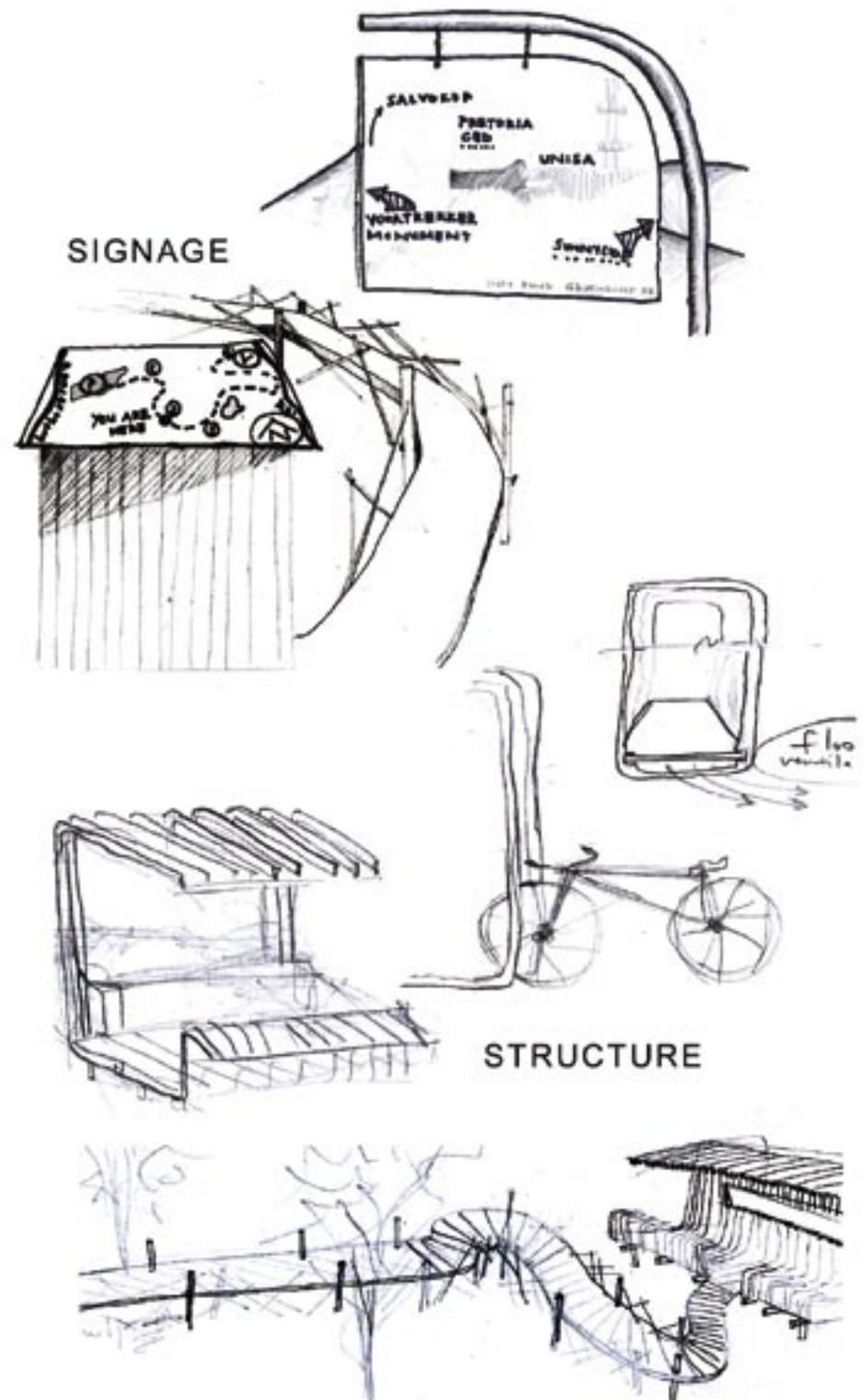
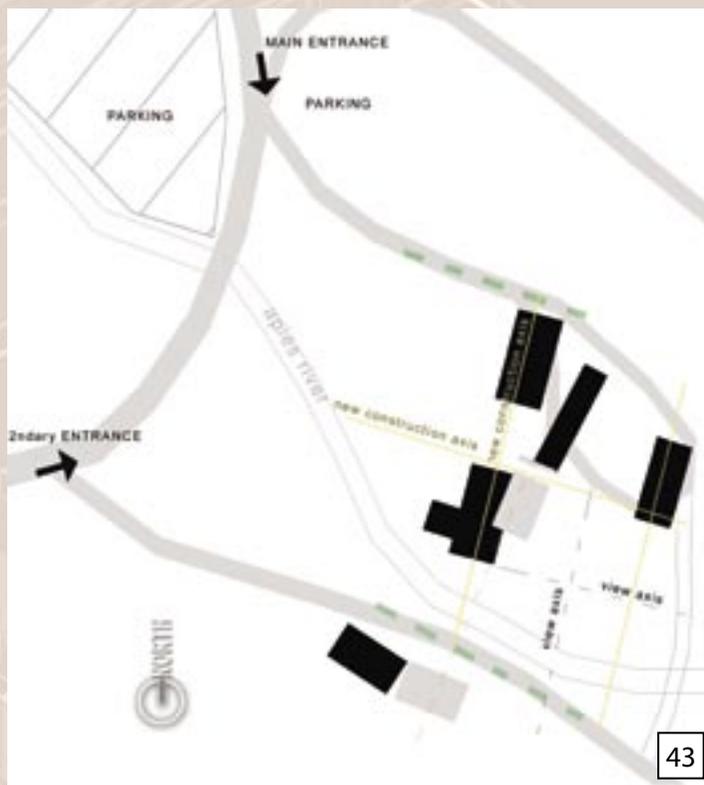
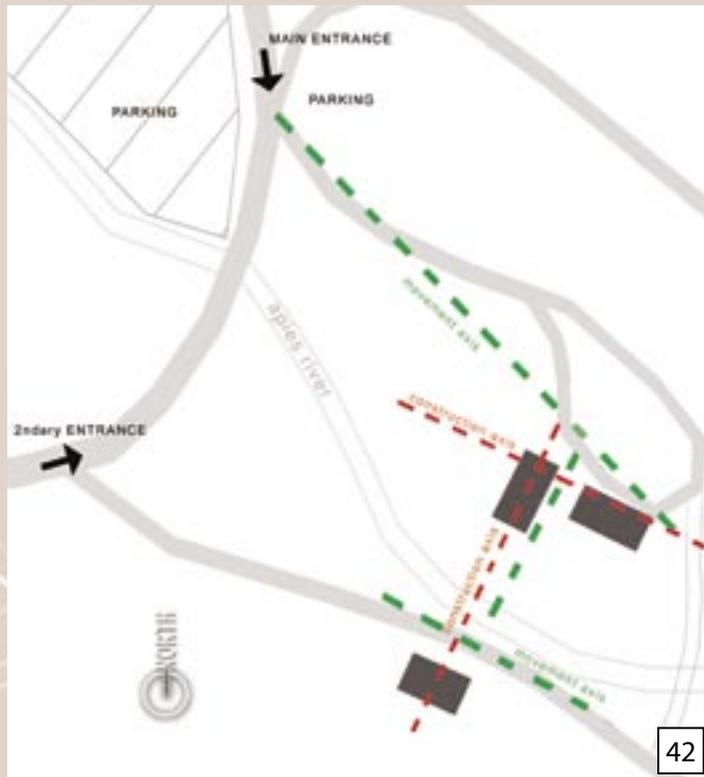


Figure 40: Contour map of Groenkloof Nature Reserve indicating the location of the new bird hide and lookout points

Figure 41: Design concept for proposed signage and lookout points in the reserve



4.3 Micro site development

4.3.1 ARCHITECTURAL DEVELOPMENT

In order to design a sustainable *Interactive Visitors Centre*, the design should be inclusive and consider all the needs of the user. Furthermore, the main criteria used in the decision-making process for the interior architecture are also to be carried through to the architectural design and the landscape architecture.

As the building envelope of the Centre was non-existent, an investigation into the expected circulation and movement of visitors was done to develop a diagrammatic structure in which to work. Various alternatives were considered and when a suitable option was selected, the detail was developed. A preliminary layout and zoning were proposed and then refined in order to explore the design concept of the *Interactive Visitors Centre*.

4.3.2 CENTRE ENVELOPE

The circulation on the site formed a starting point to develop the layout of the new structure. The movement through the site and the existing buildings form strong perpendicular axes that were used in the development of the new architecture (Figures 42, 43). The architecture is organised to form an 'H' shape on plan. This creates transitional spaces between the interior spaces and allows an optimal view of the two important vistas that can be seen from the site (Figure 43).

The rectangular shapes that are common in the shed-like structures found in the GNR and Fountains Valley are repeated in the rectangular layout (Figure 44 b, c) of the Centre. This establishes a certain familiarity in the design, so that the visitor sees the Centre as a part of the reserve.

The various functions of the proposed Centre contributed to the development of the layout (Figure 44 a). This particular

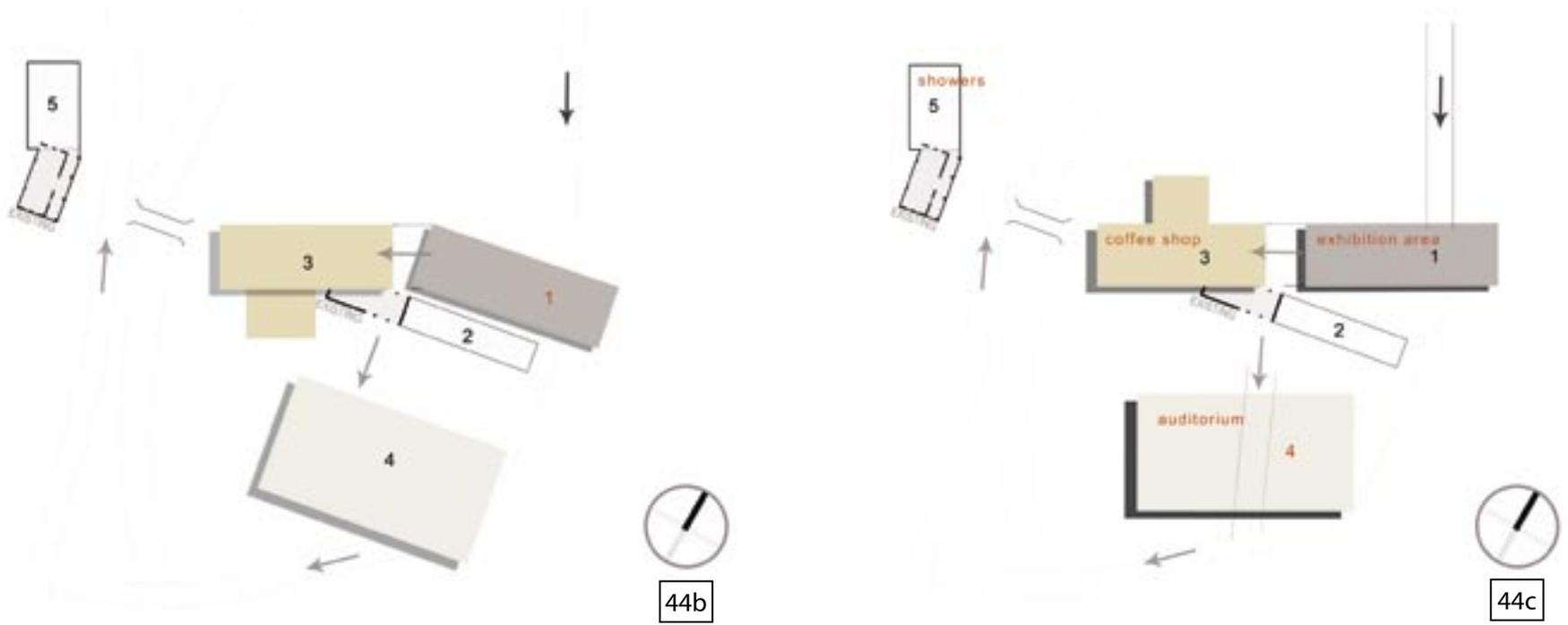
Figure 42: The movement and construction axes that exist on the site

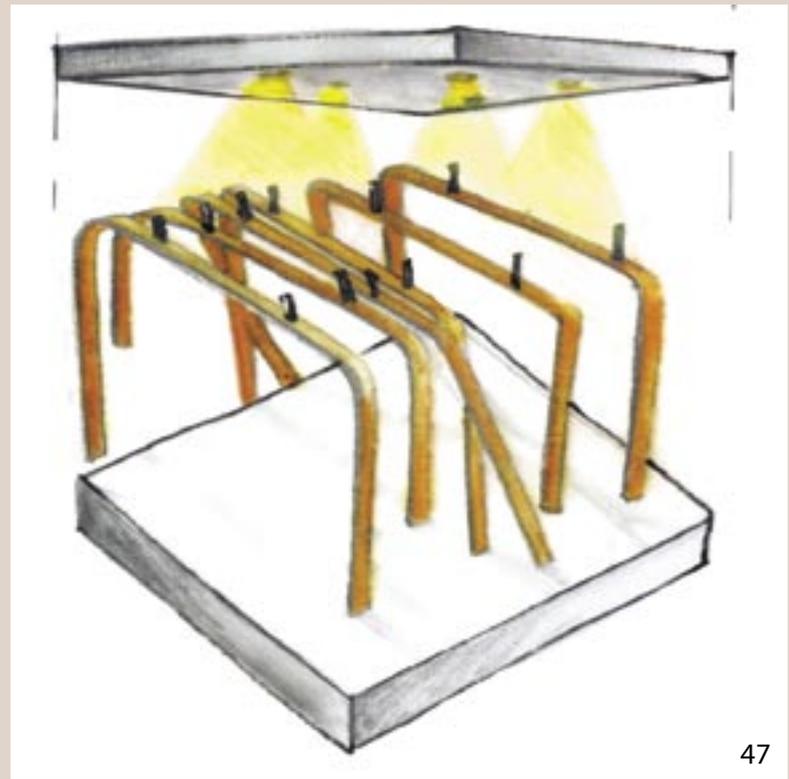
Figure 43: The proposed new construction axes on the site

Figure 44 a: Colour coded exploration of the functional layout and movement within the *Interactive Centre* (April 2006)

Figure 44 b: Exploration of the interaction between spaces in the centre (July 2006)

Figure 44 c: Final layout of the *Interactive Centre* (August 2006)





choice was made because it allows for an interactive relationship between the context and the interior spaces of the Centre.

4.3.3 VISUAL IMPRESSION OF THE PROPOSED BUILDING IN ITS LANDSCAPE

The external impression of the building was explored by using conceptual volumes (Figure 46 a, b), while the vistas of the surrounding natural area also had a direct impact on the final choice. The auditorium required a specific vertical volume, which, if above the ground, would obscure the scenery beyond (Figure 46 a). To avoid this, the design of the auditorium requires an excavation 1.6m deep.

As one enters the site from the north-western side (Figure 47) the Centre is visible through the massive old oak (*Quercus robur*) and *Celtis africana* trees. With the rough textures of

the bagged walls, rock cladding and timber ribs, the Centre sits comfortably in its natural surroundings. The coffee shop's solid flat roof and floor to the southern end seem to hover above the ground, giving the visual impression that the building treads lightly on the natural environment.

4.4 The interior design development

4.4.1 TRADEMARKS

Rib-like structures with varying functions, materials and sizes are repeated throughout the Centre; these create continuity as the visitor moves from one space within a space, to another. These structures send an unequivocal message to the public: that the Centre represents the interaction between man and nature.

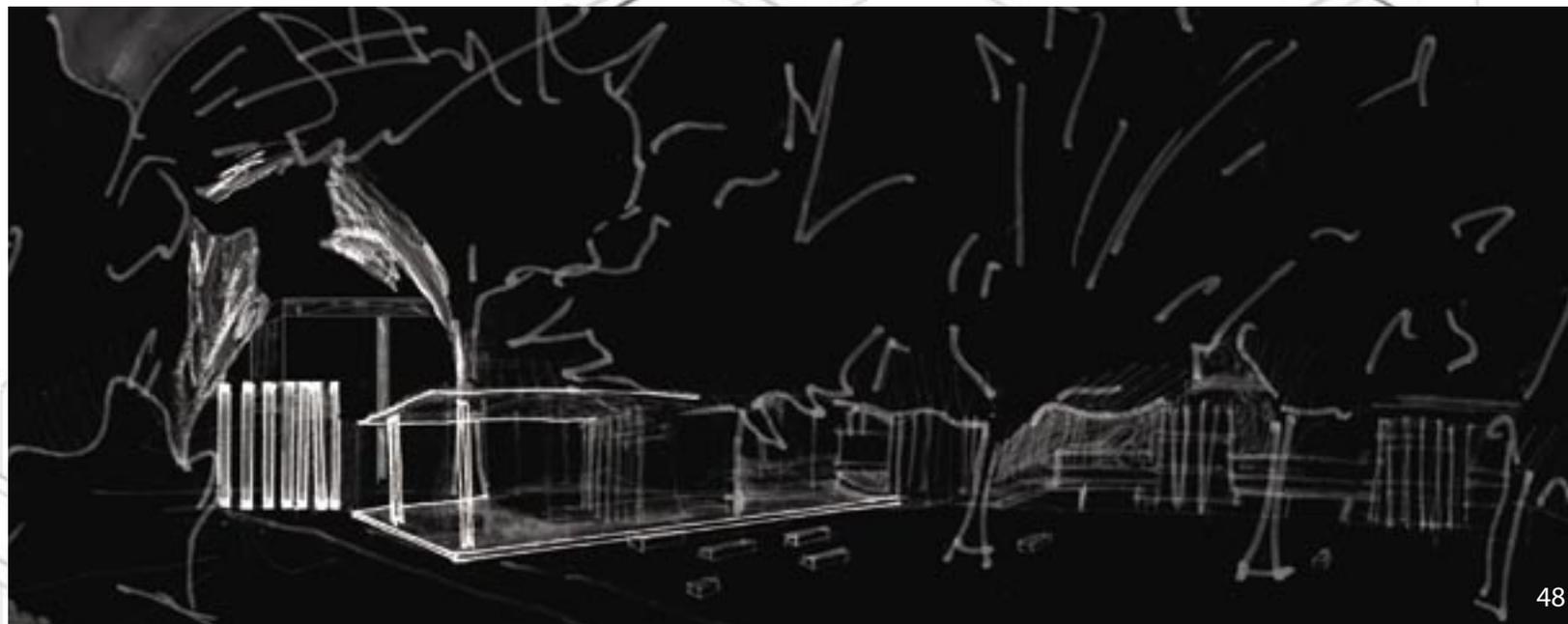
The rib-like structures (cf. 4.4.10.4 and 4.4.10.5) are lightweight, floating features that aid the visitor in identifying points of importance – the exhibition area (Figure 48, 50), coffee shop and external areas – while there are heavier, solid-looking screens in the semi-public auditorium. The fragmented and transparent effect of the ribs conveys a visual message of interconnectedness between the space enclosed in

Figure 45: Concept of the entrance to the Interactive Centre (April 2006)

Figure 46: Exploration of the effect of the auditorium as a double-volume space (a) as opposed to sunk into the earth (b)

Figure 47: Impression of the Interactive Centre seen from the main entrance or from the north-western side of the site (August 2006)

Figure 48: Concept of the interactive unit



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the structure and the space surrounding it. This is because the thin rib-like elements do not obscure the visitor's view of the vistas around him/ her.

Through the repetition of these structures, a visual trademark is created that the public will begin to associate with the *Interactive Centre*. This distinctive trademark or brand will also form part of a strategy to advertise the Centre.

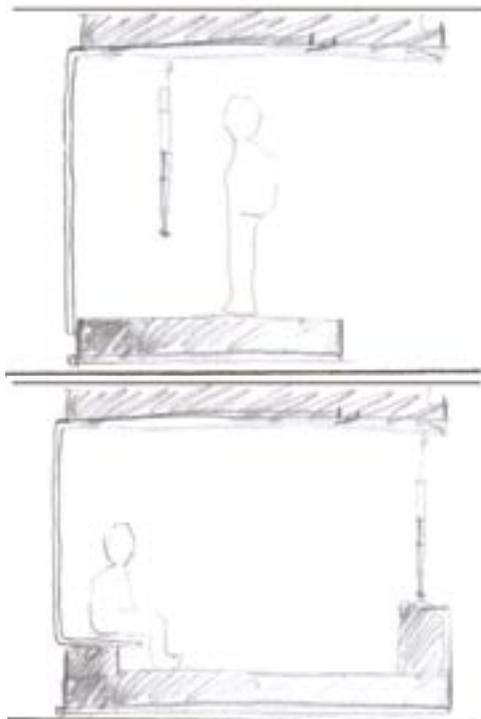
4.4.2 EXHIBITION AREA

The exhibition space is the first port of call on the visitor's path through the Centre. Beyond the pivoting corrugated metal doors with elegant wooden fins filling the space, the background appears fragmented as if one is looking up through the foliage of a tree. The first unit enclosed by these wooden fins is the information counter (Figure 71) where an attendant directs the visitor and provides maps of the cycling and hiking routes in the GNR. The visitor then views the various interactive exhibition units.

The interactive exhibition units allow the individual to engage with the natural surroundings through computers, a medium that city-dwellers are particularly comfortable

with. Each unit has two touch-screen computers, a large flat screen and seats. By slight alteration of the layout and size (Figure 49), the units can exhibit printed media like posters and photographs. The function of these units is to not only house permanent exhibits of the history and wild animal species of the GNR, but also to be used by education and conservation-oriented corporate bodies to display the visual media necessary when presenting a lecture in the auditorium. The concept behind these units (Figure 48) is to create a seemingly floating 'space within a space' surrounded by elegant plywood fins. To accentuate the weightlessness of the fins and to give the effect that the interactive exhibition unit is a separate entity within the space, the base and bulkhead to which the fins are attached are solid and box-like.

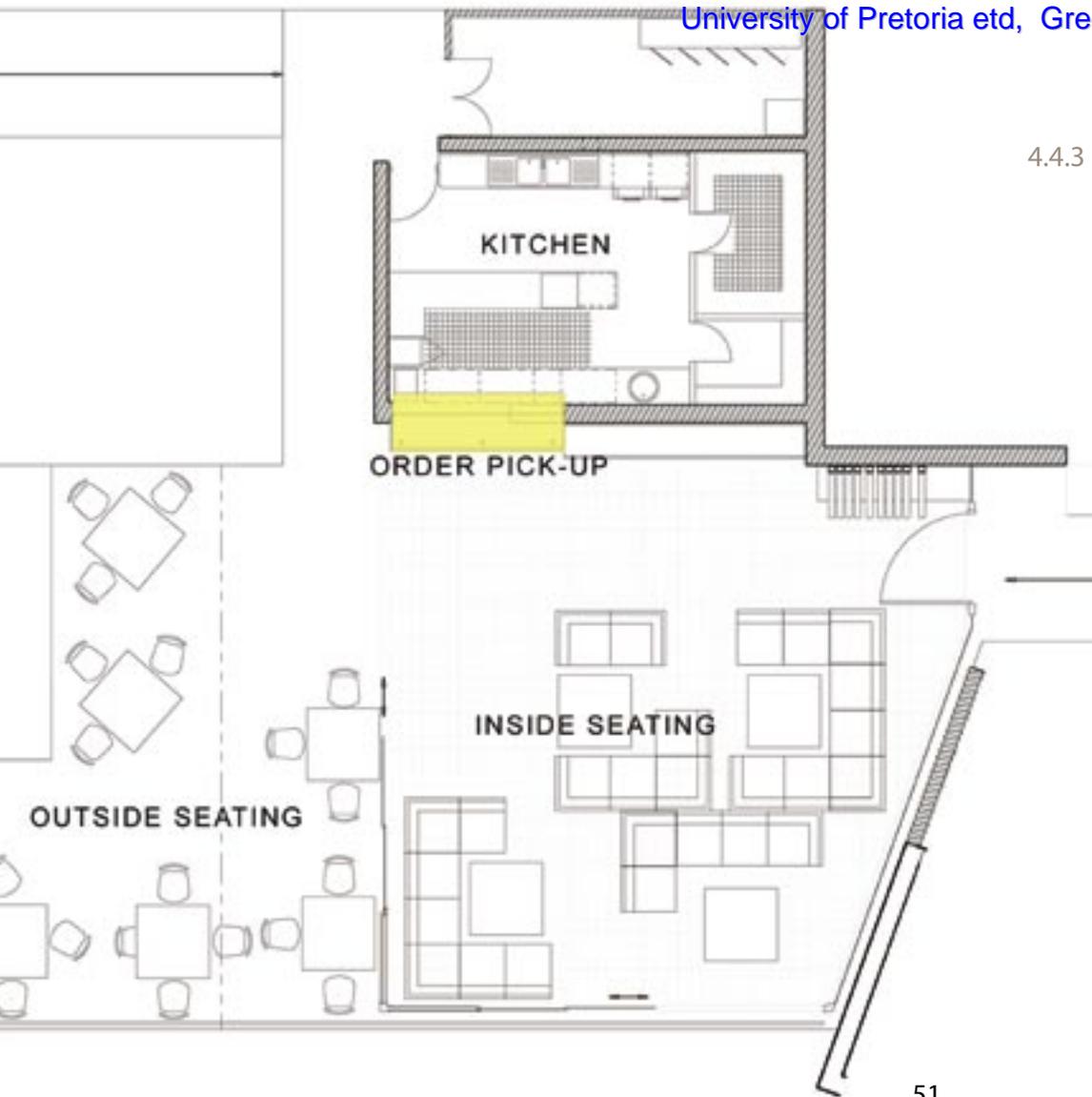
The artificial lighting fixtures used for each unit are adapted to suit the intensity of light (lux) needed for the medium on display. As one moves through the exhibition units, the existing face-brick building (which is to be retained) is visible on the hill beyond a coffee shop (Figure 53). This places the Centre within its historical context; it reminds the visitor of the era when the GNR was first established.



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4.4.3 COFFEE SHOP

The coffee shop offers a variety of beverages (alcoholic as well as non-alcoholic), including wines, teas and coffees. It serves snacks as well as light meals. Snacks such as sandwiches and home-grown salads from the vegetable garden, are prepared entirely in the coffee shop's kitchen, while other meals such as pies, pasta dishes, pastries, cakes and desserts are sourced daily in a fresh but pre-prepared format, from nearby suppliers. The sourced foods are then either stored in the cold room or dry storeroom, or heated and prepared for serving from the order pick-up counter (Figure 51).

Customers enter the coffee shop after moving up a concrete ramp and through glass doors with text and images to illustrate the mood and menu of the shop. Configurations of comfortable olive green sofas (Figure 52), coffee tables and mobile ottomans make up the inside seating area. The inside seating area can open up by means of retractable, frameless glass doors on each side. The outside seating area faces out towards the existing brick building (Figure 53) and the impressive natural surroundings. The outside area includes bent steel and plywood seats and the tables are of laminated beams.

The coffee shop's kitchen is located on the north-western side of the eatery to provide easy access for deliveries and garbage disposal. The kitchen comprises a wash-up area, an area for preparation of snacks and drinks, a cold room and storage space for dry goods. The kitchen and coffee shop interior is separated by a pick-up nook directly behind the glass fridge display. A translucent acrylic panel suspended from the ceiling of the kitchen obliterates the customer's view of the wash-up area.

The restrooms (4.4.9.1) are situated near the entrance to the coffee shop. Translucent acrylic panels act as the screens around this area but also provide signage information.



Figure 49: Concept development of the interactive unit to form a unit suitable for displaying printed media

Figure 50: The interactive exhibition units as they appear within the exhibition area

Figure 51: The layout plan of the coffee shop

Figure 52: Sofa and coffee table configuration for the inside seating area of the coffee shop



4.4.4 CYCLING AND CURIO SHOP

Located between the exhibition area and auditorium, is a curio shop and Fritz Pienaar cycling shop. The designs of the shops are to be aligned with the rest of the Centre, yet with a more commercial approach. The concept is to integrate the activities that visitors to the reserve take part in, with the design of the shop (Figure 56) such as using mountain climber's equipment as fixtures. This is to be taken further and developed by the tenants of the respective shops. An exemplary shop design is that of Due South, in Woodlands Boulevard, Pretoria. This outdoor shop makes use of synthetic and natural materials (Figure 54) that suggests the activities of hiking, mountain climbing (Figure 55) and cycling. This method gives the shop a very specific identity.

Figure 53: The existing brick building visible beyond the proposed coffee shop

Figure 54: Timber and steel stools within the Due South shop

Figure 55: Clothing display within the Due South shop. Units are suspended from mountain climber's rope

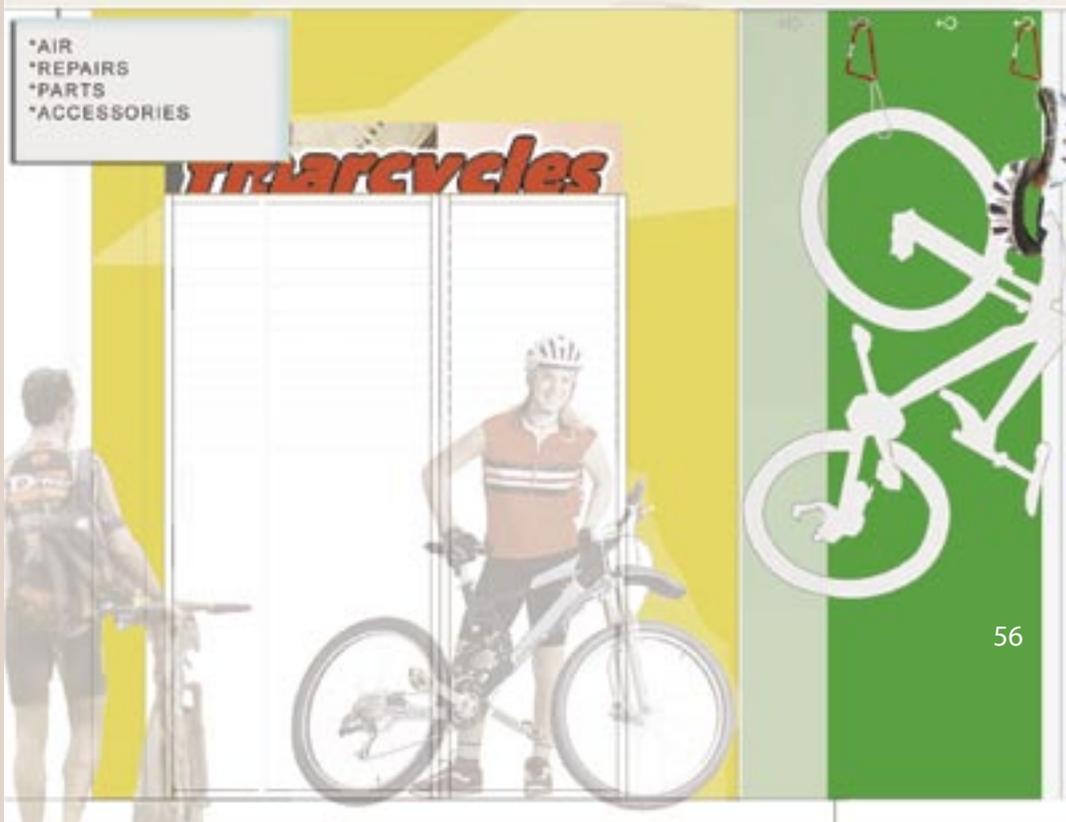
Figure 56: Concept of the cycling shop window display



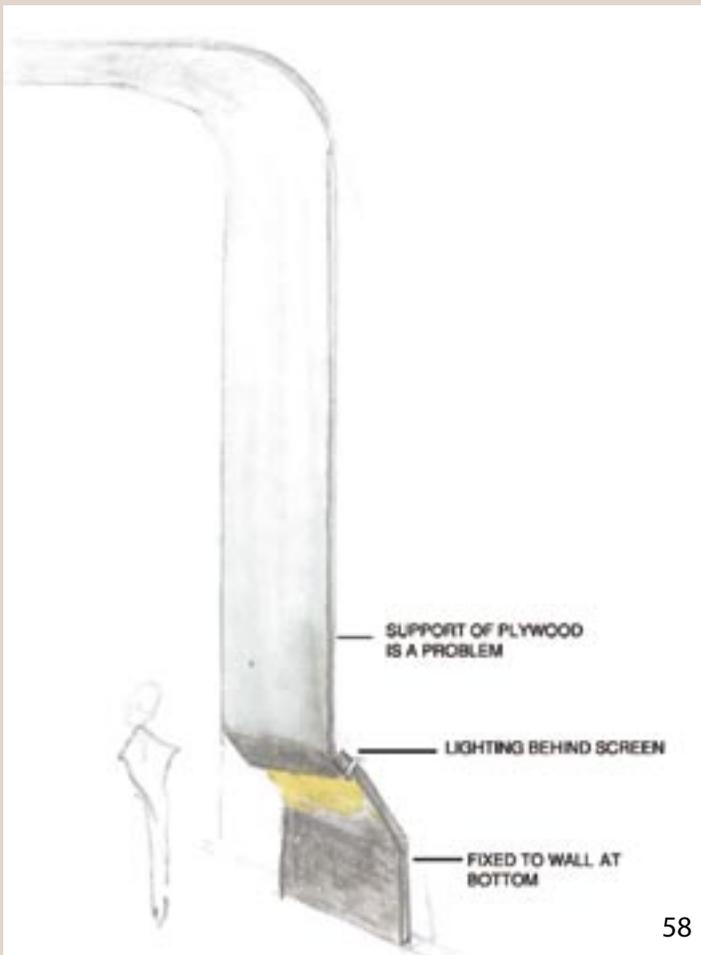
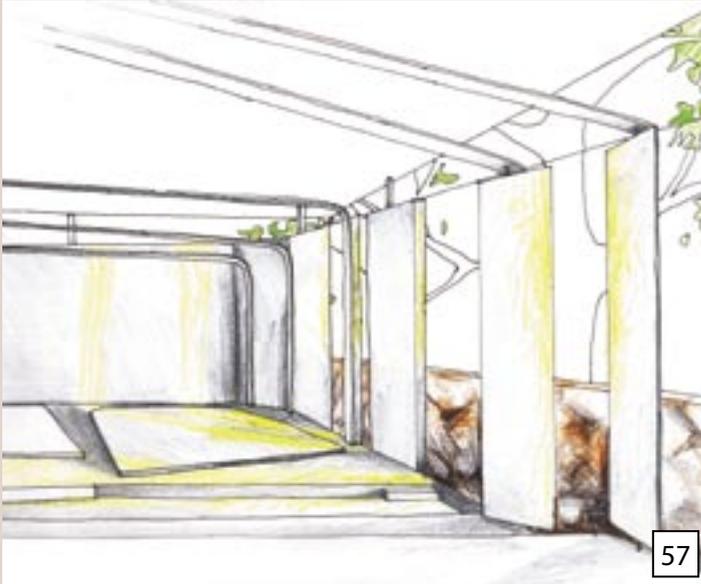
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4.4.5 AUDITORIUM CONCEPT

The auditorium provides the climax of a visit to the *Interactive Centre*, both in regard to its design and function. A progression in the relative importance of the spaces in the holistic design provides a sense of hierarchy in the Centre; this is important in the orientation of the visitor. Listed below are several aspects that contribute to establishing this hierarchy in the design aura of the auditorium.

Design-linked aspects:

- the seemingly weightless plywood ribs throughout the coffee shop and exhibition areas become the dominant feature of the auditorium: the auditorium screens (Figures 57-60)
- the design detail reaches a high point in the auditorium in the considered application of advanced technologies: acoustics, ventilation and ergonomics
- the individual visitor has final control over his or her thermal comfort by adjusting the pivoting doors and glass louvres along each side of the auditorium
- the eastern and western facades have retractable doors to create an interaction between visitors and the context by means of the surrounding views

Functional aspects:

- after examining the various exhibits, the visitor may choose to attend a lecture or conference that may be held in the auditorium or adjacent boardroom; these add to the visual stimulation that is awakened by the interactive exhibits
- the auditorium is situated within the semi-private zone of the *Interactive Visitors Centre* and the visitor becomes aware of this change in zoning due to the courtyards that separate the auditorium, office and boardroom from the cycling shop, coffee shop and exhibition area
- the auditorium is also the final destination for groups of learners before they are guided through the reserve to view the wildlife

4.4.6 AUDITORIUM DESIGN

The auditorium comprises a seating and stage area in the public zone and a control room in the private zone, separated by safety glass. The visitor may choose to enter the auditorium and listen to the speaker from the balcony area; if he or she decides to enter and take a seat while a lecture is in progress, the wide steps of the seating structure allow for easy access.

Ergonomics and acoustic quality played a major role in developing the auditorium interior. The user is able to control his or her environment by activating the adjustable doors on the sides of the auditorium. The plywood screens are suspended from the concrete roof slab and envelope the audience. This establishes a 'space within a space' and sets the auditorium space apart from all others in the Centre. The plywood screens aid in the reflection of sound (Figure 81) and they also screen off the western sun when the rotating doors are open. Where the screens meet the side walls light fittings are fixed behind the plywood, hidden from view. Light floods down on the stairs (Figure 59, 60) to ensure safety and this creates a pleasing ambience in the auditorium.

The seating structure is a raked steel construction with a lapped-nose detail (Figure 61) to allow for ventilation of the void underneath the seating (cf. 5.3). The upholstered seats are clipped to the structure of each step, can be swivelled and are removable if the particular function or lecture requires more seating space.

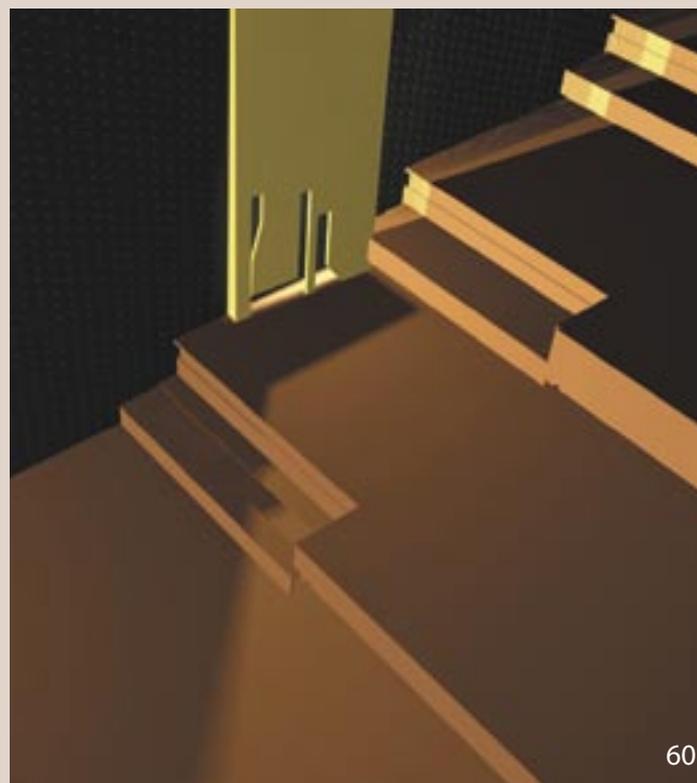
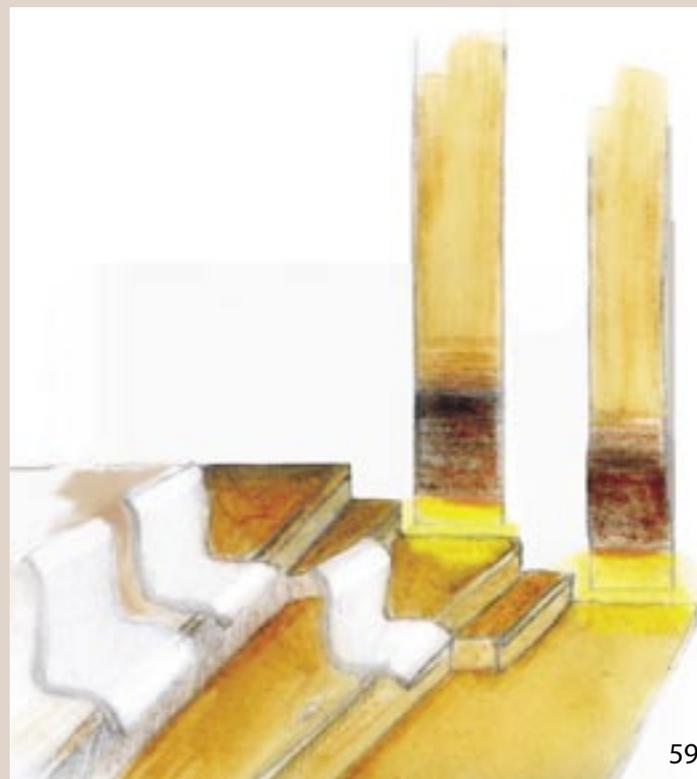
The visitor is also able to enjoy the impressive vistas of the natural surroundings when the rotating doors of the eastern facade are opened. The facade opens out to a stepped water feature and allows a cool breeze into the auditorium.

Figure 57: Design concept of the auditorium interior (April 2006)

Figure 58: Auditorium screen resolution (April 2006)

Figure 59: The plywood screens concept with light spilling down onto the steps as a safety and aesthetic feature (June 2006)

Figure 60: Detail on the plywood screens and their relation to the auditorium steps with artificial lighting (September 2006)



4.4.7 OFFICES

Adjacent to the auditorium is a boardroom and offices/consultation room. The boardroom doubles as a lecture room and private function area as a kitchenette is included behind a translucent glass screen. Both the boardroom and office area can open up by means of the retractable glass doors that surround the spaces, to accommodate large groups of visitors and to make most of the scenery on the southern end of the site.

4.4.8 SIGNAGE

One of the current problems at the GNR is the lack of direction-giving signage. With this in mind the signage of the Centre forms an integral part of the design strategy.

The initial signage concept (Figure 62 a, b) tended to dominate the interior spaces and was subsequently discarded. Instead it now utilises transparent and metal components for a refined architectural expression. The signage system makes a distinction between signs that indicate general direction (such as the restrooms, auditorium, coffee shop, and showers) and those that provide information on specific activities in the Centre, such as the information desk and the take-away counter in the eatery.

The general direction signage (Figure 64) is an illuminated box of translucent acrylic panels set into stainless steel fixtures. The panels are backlit and suspended from bulkheads at two main orientation points in the Centre. The signage for specific activities (Figure 63) consists of laser-cut stainless steel letters fixed individually to a solid substrate. The metal letters are artificially illuminated from above by means of ceiling-down lighters.

4.4.9 SERVICES

Restroom and showering facilities are services that visitors can reasonably expect at the GNR because many of them explore the reserve on foot or on bicycles. The showering facilities are placed separately from the Centre to provide privacy for ablutions before the guests enjoy relaxing activities in the public zones of the Centre. There are restrooms located at the coffee shop and the auditorium.

4.4.9.1 Restrooms

The restrooms are designed with service ducts that ensure flexibility in design and easy access for maintenance.

Because they are exposed to a constant flow of users, the material finishes and fittings of the restrooms have to simplify and minimise the required maintenance. The cubicle doors and sanitary fixtures have a stainless steel finish. The high cost of this material is justified by its corrosion resistance, ease of fabrication, hygiene and low toxicity. The external enclosure of the restrooms (Figure 66) is brightly coloured translucent acrylic panelling (Figures 65, 67) fixed to pedestals to make the facilities easy to locate. Acrylic or PMMA (polymethylmethacrylate) sheets, blended with PVC, are non-toxic, recyclable and durable. Solid Surrinno surfacing is used for the hand washbasin troughs and importantly this is heat and scratch resistant. Surrinno joins seamlessly which makes for a hygienic and easy-to-clean finish. Surinno surfacing and acrylic sheeting are unconventional materials for restrooms; this surface contrasts boldly with the face-brick walls of the existing building that forms part of the restroom complex near the entrance to the coffee shop.

The integration of unisex toilet facilities poses the risk of sexual crime, but there are certain factors that minimise this risk as far as the GNR is concerned:

- visitors to the GNR pay an entrance fee of R30
- entry to the reserve is controlled by guards at the main gate
- the reserve is closed off with high-security wildlife fencing
- the attractions of the activities at GNR draw a selected group of users

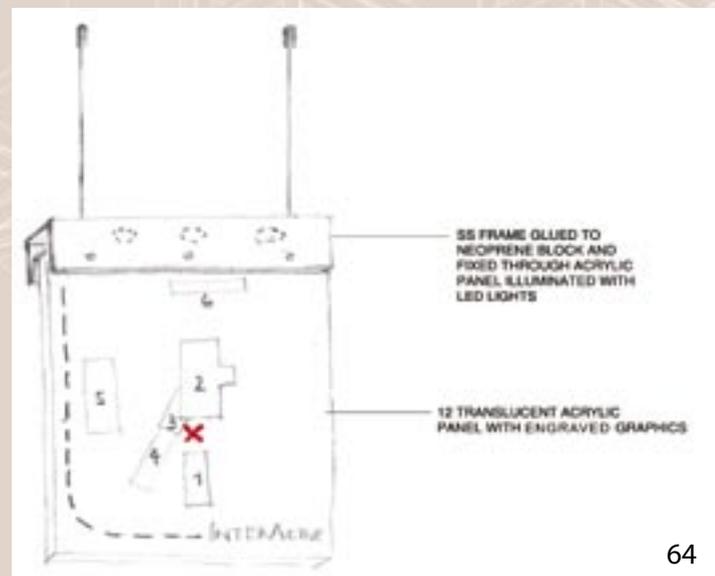
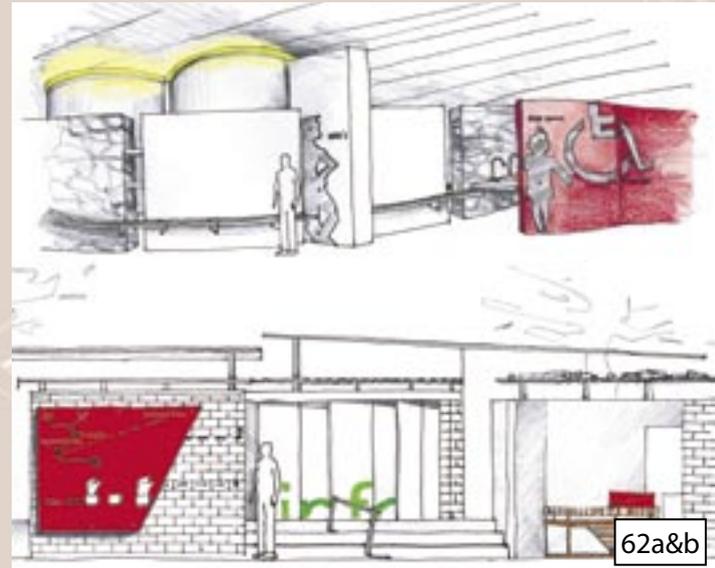
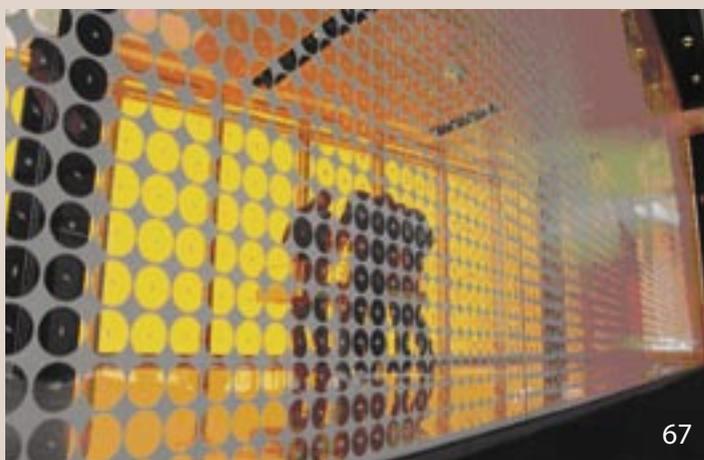
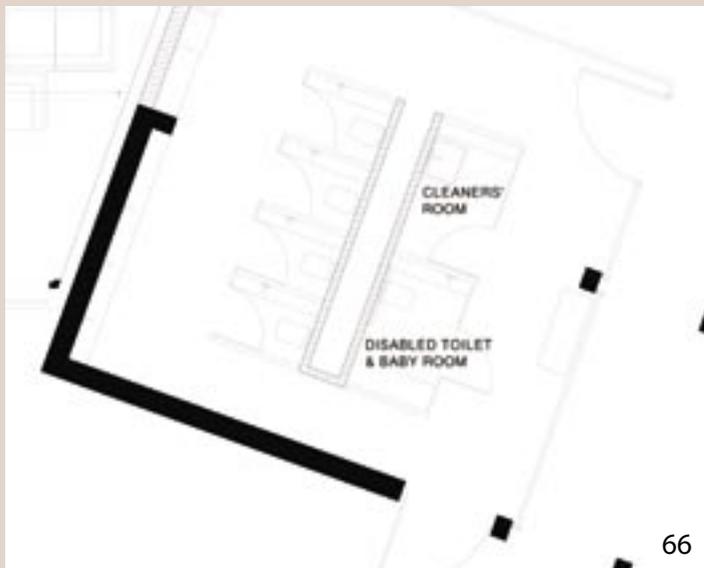


Figure 61: Final resolution of the ventilation gap in the nose of the auditorium seating and steps

Figure 62 a & b: The initial signage concept (April 2006) that was subsequently discarded in favour of a more refined architectural expression

Figure 63: Signage attached to a wall to indicate specific activities

Figure 64: Signage concept for indicating general direction



The design nevertheless deals with this potential risk by integrating translucent materials into the design and positioning the restrooms at central points in the Centre, close to where the permanent staff (information desk and offices/boardroom) would normally be stationed.

4.4.9.2 Shower facilities

A semi-mobile shower or toilet unit forms part of the proposal for the reserve as a whole. The unit components are to be pre-fabricated and assembled on site, be it within the Centre or out in the far reaches of the reserve and at the lookout points (cf. 4.2).

The shower facilities consist of individual shower units and the existing red face-brick house (Figure 51) will be converted into a locker room. There are two types of shower units; the one contains a shower only while the other has a shower, water closet and hand washbasin.

The materials used in the construction of the separate shower units have to be hardy enough to withstand the elements, because they are to be used throughout the reserve at the proposed lookout points. A timber envelope is suggested as a secondary layer over aged steel sheeting. The timber envelope provides privacy for the user when inside the shower unit, while also allowing a view out to the surroundings (Figure 69). Galvanised steel sheeting is used as primary dry-walling of the shower unit as it provides mass, stability and can be treated to weather attractively. A pre-fabricated interior component contains the toilet, toilet-roll holder, hand washbasin and tap. The shower is fitted separately and is closed off with a toughened glass panel.

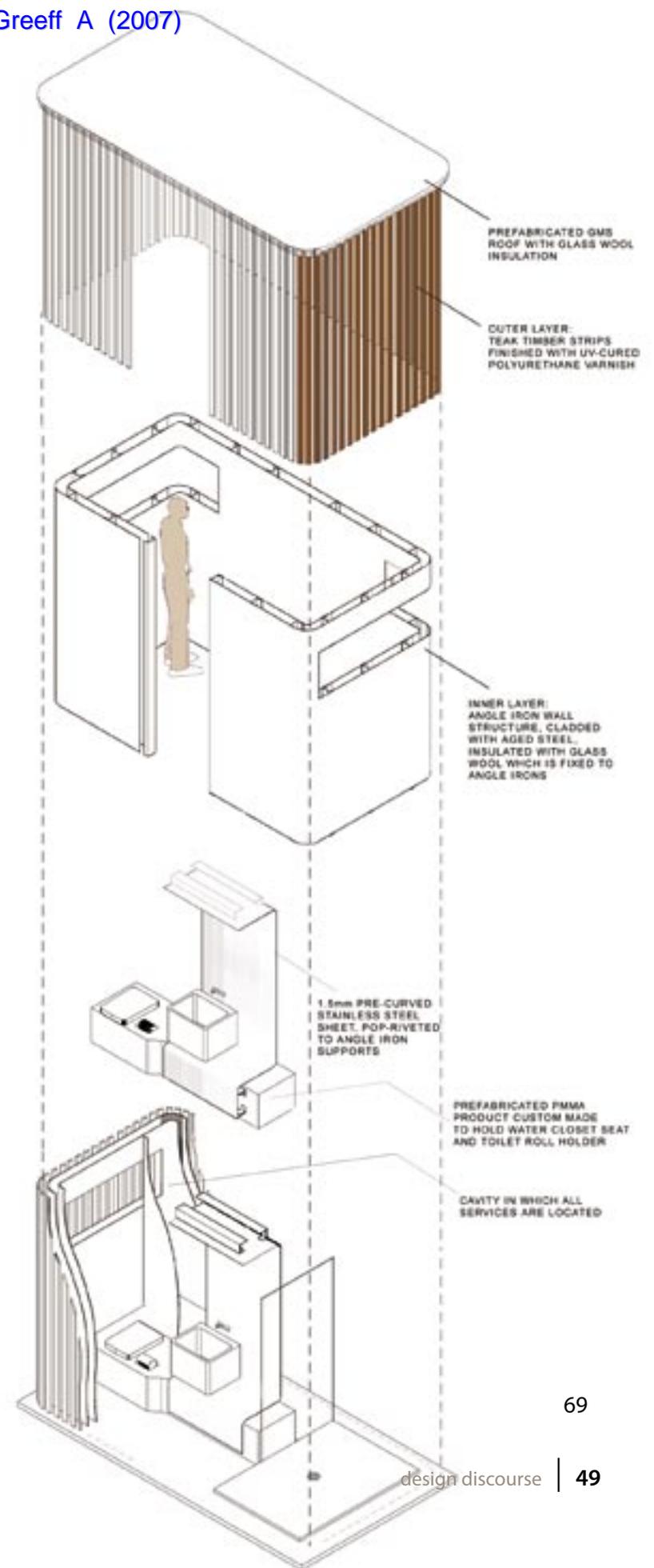
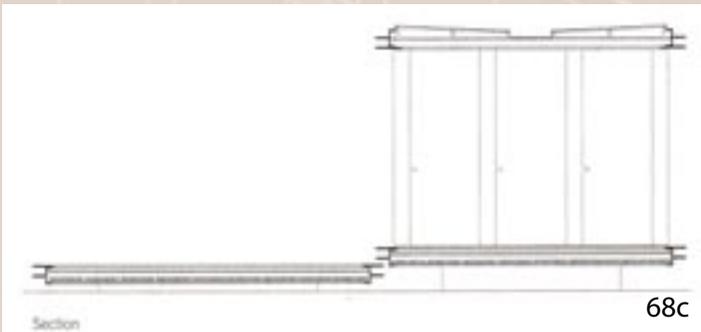
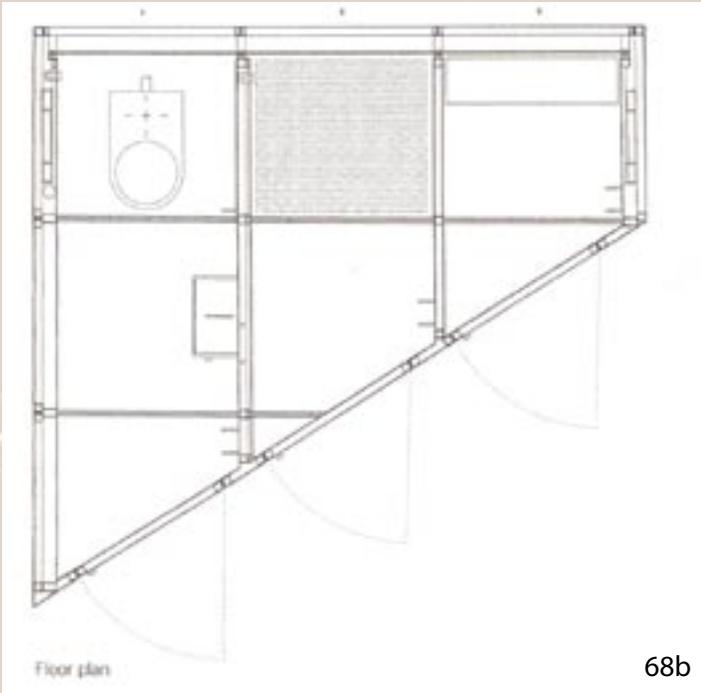
Figure 65: An influence on the proposed design of the restrooms: '2x4 Bathroom' by Rem Koolhaas

Figure 66: The layout plan of the restrooms adjoining the coffee shop

Figure 67: The 'Brain POP office' restrooms designed by 4pli, showing decorative logos on acrylic sheeting

Figure 68 a, b & c: An influence on the proposed design of the shower units: 'Public Toilets in the forest' by Aranda Pigem Vilalta Architects in Olot, Spain. Plan and section not to scale

Figure 69: Resolution of the shower facilities



4.4.10 PRODUCT DESIGN

4.4.10.1 *Information counter*

The information counter is the visitor's first port of call in the *Interactive Centre* and is therefore part of the first impression that the visitor forms of the Centre. For this reason, the counter is an essential design component. The information counter is positioned on a black powder coated steel plinth as you step into the exhibition area. A full-time attendant is in charge of the counter to assist visitors to the Centre and to manage bookings for the self-catering guest houses, auditorium, coffee shop and heritage-hiking trail. The counter serves as a workstation for the appointed attendant as well as a point of orientation for the visitor. From this point in the exhibition area, the visitor can choose to either browse through the cycling and curio shop, to enjoy refreshments at the coffee shop or to attend a lecture in the auditorium.

The concept of the counter is to create a striking visual feature that conveys the same aesthetic as the rest of the Centre. Therefore, a combination of natural and synthetic materials is used to accentuate the curved lines and signage that form part of the design. The materials used are laminated glass, saligna laminated beams and stainless steel. Laser-cut stainless steel letters are mounted to the front of the counter in a corresponding style to the signage throughout the Centre (Figure 63). The information desk accommodates wheelchair-users and children by having a partly lowered counter to the one side (Figure 71).

4.4.10.2 *Balustrade*

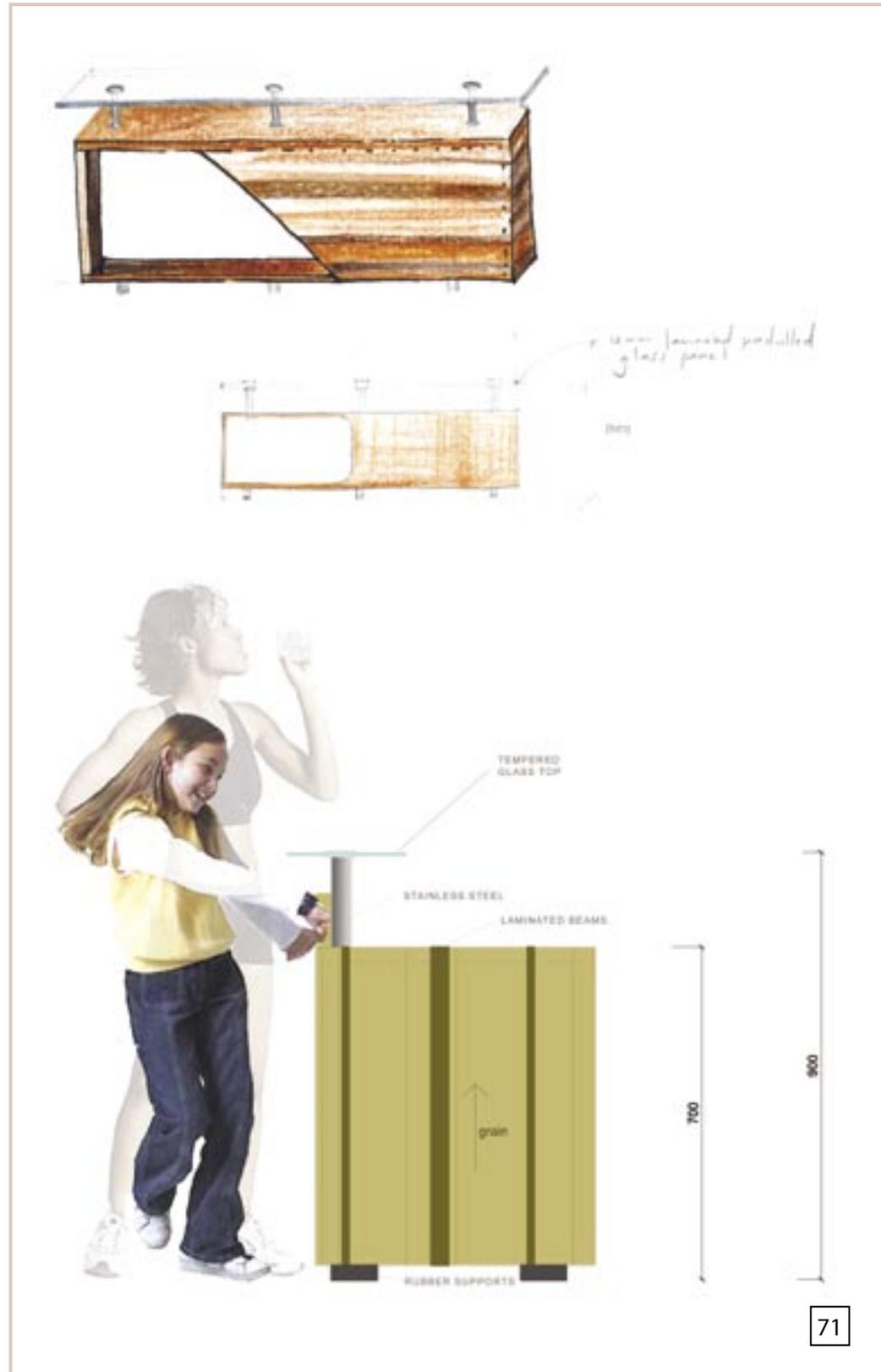
The balustrade is an important element of the inclusive design strategy (Figure 72 a) of the *Interactive Centre* as it considers the safety of children, the visually and physically disabled and elderly visitors to the Centre. The balustrade is located at all points throughout the main building where there is a change in level eg. stairs and ramps, as specified by the SABS 0246.

The concept of the balustrade (Figure 72 b, c) is of curved, diagonal vertical elements, connected by a continuous handrail. The diagonal lines and curve of the vertical



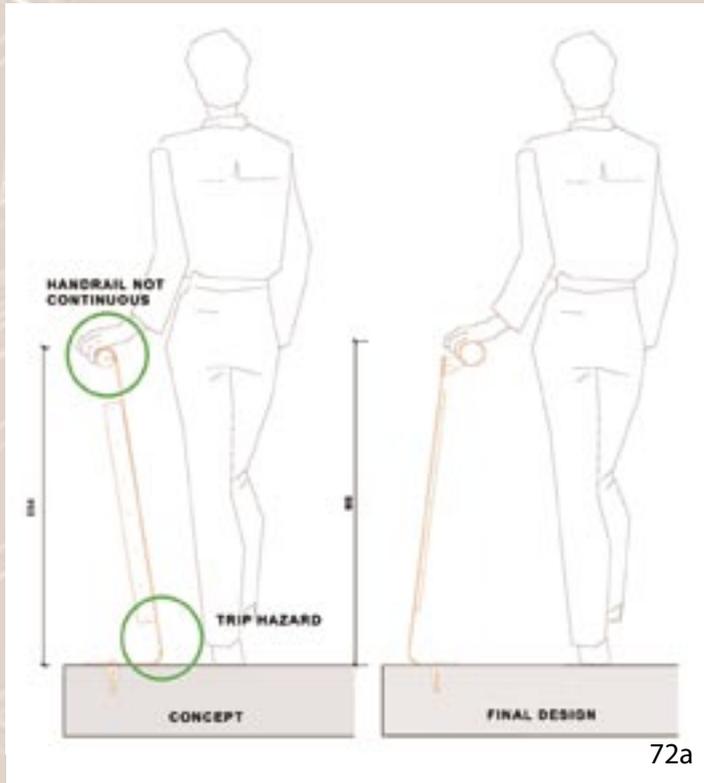
Figure 70: Information counter concept

Figure 71: Detail of the information counter; the first port of call in the *Interactive Centre*



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elements contribute to the simple, yet striking aesthetic of the Centre and adds quality and meaning to a product that, in most cases, is designed strictly for function.

The balustrade is made of stainless steel, a durable, rust-free material that will perform well when exposed to the elements. The railing is of a continuous stainless steel tube as per SABS 0246. Nanotubes form the horizontal part of the balustrade (Figure 72 c) and are spaced at 100mm c/c as per SABS 0246.

4.4.10.3 Auditorium swivel chair

As the users of the auditorium will range from small corporate groups to large groups of learners, it has to be adaptable for different needs and situations. The requirements for a group of learners, for example will be very different from those of corporate groups. The auditorium seats are removable to allow children to sit on the auditorium steps.

The chairs comprise a polymer base, upholstered with polyurethane fabric (Figure 73). They are bright green and contrast pleasingly with the auditorium's natural bamboo flooring. The chairs slide into the auditorium steps by means of a snap-fit fixture in the flooring panels. The fittings are to be designed almost flush with the floor finish, so that it is comfortable to sit on the floor when the chairs have been removed.

4.4.10.4 Product A

The rib-like structures used throughout the Centre as a trademark (cf. 4.4.1) will assist the visitor to identify points of importance (exhibition area, coffee shop and key external areas). Product A (Figure 75) was the primary concept from which product C, product B (the interactive exhibition unit) and product D (the auditorium screens), were developed.

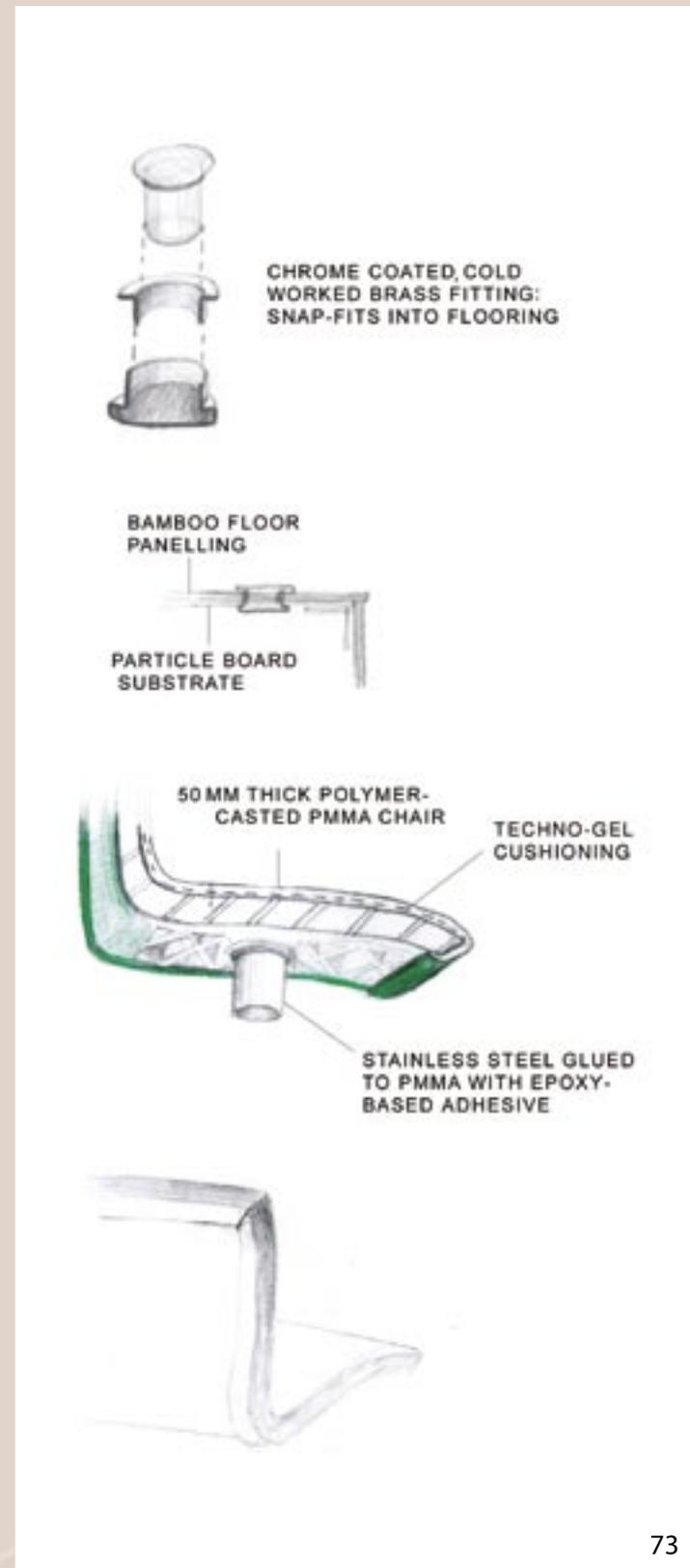
This product comprises a series of rib-like curved plywood panels that are suspended from a bulkhead. Product A, as with product B (cf. 4.4.2) , creates a 'space within a space' and accentuates the natural surroundings by providing a fragmented image of the vistas beyond. The function of

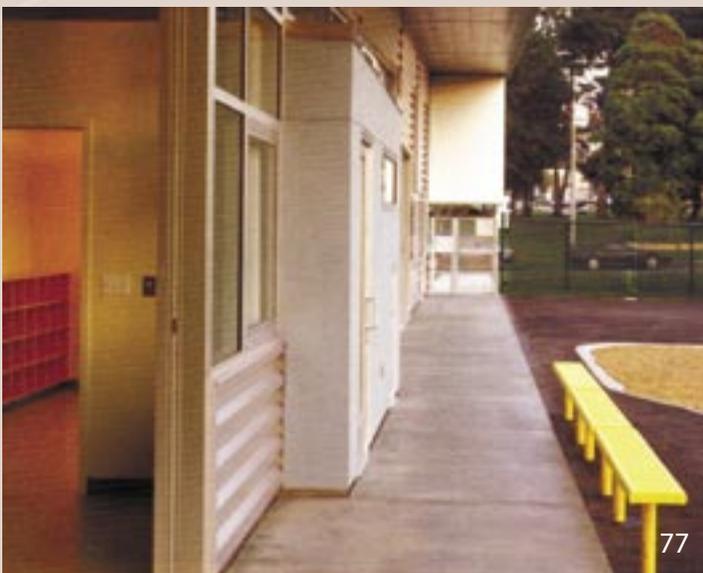
Figure 72 a: The initial balustrade design was exchanged for an inclusive design

Figure 72 b: Detail resolution of balustrade materials (August 2006)

Figure 72 c: Initial concept of nanotubes that form part of the balustrade

Figure 73: Detail resolution of the auditorium swivel chair components





the product is to serve as a trademark feature and point of orientation; it is also used for seating in the locker room and coffee shop. Signage can also be integrated with the product.

The ribs are made of pre-curved plywood sections (Figure 74) that are assembled on site with dome nuts, threaded rods and washers. The ribs are then hung from the installed bulkhead to the height needed for the specific space. The ribs hang on a rope, attached to stainless steel hooks. The ribs can be adapted to fit between any finished floor level and ceiling from 1.7m to 2.1 m from one another.

4.4.10.5 Product C

Throughout the Centre, there are external units where a visitor may leave a bicycle while attending a lecture or drinking coffee. These units look similar to product A, but are made of treated curved steel ribs, bolted to the respective concrete slab, with reeds and polycarbonate sheeting as infill material to create a pergola.

Product C serves as a shading mechanism (over the external seating of the coffee shop), a storage device for bicycles (Figure 76) and can be integrated with signage to orientate visitors to the Centre.

4.4.10.6 Door type A

The pivoting door is located along the auditorium facades and on the western facade of the exhibition area. The doors' design concept is to be adaptable to the needs of the users. The doors can either be used to screen off sun and light, or a hinged steel mesh panel can be opened to allow light into a space. The doors consist of corrugated steel sheets in a profile, with insulation material in the cavity (Figure 78). The doors are installed to run on a steel wheel in a track. The tracks are to be inlaid into the concrete flooring to ensure they do not become a trip hazard for visitors.

Corrugated metal sheeting (Figure 77) is widely used for roof construction in the reserve, Fountains Valley and the rest of Pretoria. By using the material in door type A, there is an interesting contrast with the smooth textures of glass and concrete in the auditorium.

Figure 74: A coffee table of 32mm curved plywood that influenced the design resolution and material choice of Product A

Figure 75: A single rib, forming part of Product A

Figure 76: Product C used for storage of visitors' mountain bikes

Figure 77: IBR metal sheeting used as external wall cladding on a building, which influenced the design of pivoting door type A

Figure 78: Technical resolution of the materials used in the pivoting door type A

