

NIEUWOUTVILLE CARAVAN SITE UPGRADE



ECO DESIGN
ARCHITECTS & CONSULTANTS
ANDY HORN
B. Arch. (UCT)

Tel/Fax: (021) 462 1614
ecodesign@mweb.co.za

Project Team:

Structural & Electrical Engineers: David Leukes of B.V.I. Northern Cape Engineers, Tel: +27 (0) 54 337 6600, david@bvinc.co.za

Quantity Surveyor: Doug Sparks of Kahts & Sparks Quantity Surveyors, Tel +27(0) 21 761 5794, dsparks@global.co.za

Community Liaison and “Banking on Bulbs” Master Plan **Project Co-ordinators:** Conservation International Southern Africa Hotspots Program, Kirstenbosch National Botanical Tel: +27(0) 21 762 6838, s.frazee@conservation.org

Landscape Architect: Diekkie van Nieuwenhuizen of Earthworks Landscape Architects, +27(0) 21 783 1631, earthworks@fiscali.co.za

Description of the Project

Location: Nieuwoudtville Caravan Park lies near the edge of the escarpment in the Northern Cape. The area is a biodiversity hotspot and is known as the *bulb capital of the world*. The dry High Veld climate is exposed to extremes of weather.

Background: In March 2004, Conservation International organized a week long community participation “Banking on Bulbs – design charette” which set out to conserve biodiversity through the holistic development of tourism on the Bokkeveld Plateau. This resulted in a regional development strategy. A further outcome was to halt the ongoing municipal caravan site upgrade so as to realign it with the broader objectives of the charette. Community task teams were set up to carry forward specific objectives of the strategy and Eco Design was appointed to the project.

Brief: The architectural brief included the development of a gatehouse, 6 chalets and renovations to the existing ablution block. The aim was to create an environmental showcase in concert with the charette while increasing the resorts’ marketability.

Design Strategy: The design strategy makes use of locally available natural materials to minimize environmental impacts while maximizing community involvement and local job creation. By utilizing a range of renewable energy and ecological sanitation systems, running costs can be minimized. Furthermore this helps to safeguard environmental sustainability and increases the site’s marketability.

The Design:

Gate House & Chalets: These buildings are to be built using an innovative straw bale building technique recently tested by Eco Design on another project. This involves first dipping straw bales in a clay slip prior to their being stacked while still moist between a timber pole and stone structure. The walls with the planted roofs help create incredibly thermally efficient structures, particularly suited to the local climate. The chalets are to be serviced by dry composting toilets and their grey-water is to be recycled to irrigate the landscape. Close coupled solar water heaters located above the stone cones showcase environment friendly domestic water heating. The L shaped plan of chalet A with views of the dam, helps shade the veranda from the hot westerly sun.

Ablution Alterations: Alterations to existing ablutions involved the safe removal of hazardous asbestos roofs, turning the centre space into change rooms under an open pergola structure so as to break the scale and reuse the maximum space and material. The circulation is redirected using screens of timber saplings sourced from local alien vegetation. The services are retro fitted with super efficient solar water heating evacuated tube collectors, water efficient flushing devices, rainwater tanks which double up as screens and a biogas methane digester which will supply gas to the chalets.

Target Issues

Quantum Change & Transferability ****

- **Innovative Technology:** Rubble foundations, straw bale, sod roof, solar evacuated tubes, compost toilet, biogas digester, grey water re use are locally groundbreaking.
- **Skills Transfer & Community Involvement:** Transfers ideas into community with training initiatives.
- **Appropriate Technology:** local material & simple construction improves accessibility.
- **Eco-Building:** Sets new precedent for region, improved marketability.
- **Healthy:** Non-toxic materials & finishes.

Ethical Standards & Social Equity *****

- **Regional Development Strategy:** The first time in the history of the region that such a wide sector of the community were allowed to shape their mutual future.
- **Multi-Level Community Input:** Community input is fostered through local task teams & community forums, co-ordinated by Conservation International.
- **User-Friendly Non-Toxic Building Materials:** Safeguard construction workers & future building inhabitants.
- **Appropriate Technologies To Include Local Community & Create Jobs:** Local, natural material maximizes community involvement through material procurement & labour intensive construction.
- **Local Skills Transfer & Self-Management** In the short, medium & long term.
- **Aligning Economic Development With Biodiversity Conservation:** Spreads a message that local economic development can bring care & appreciation for environment.

Ecological Quality & Energy Conservation *****

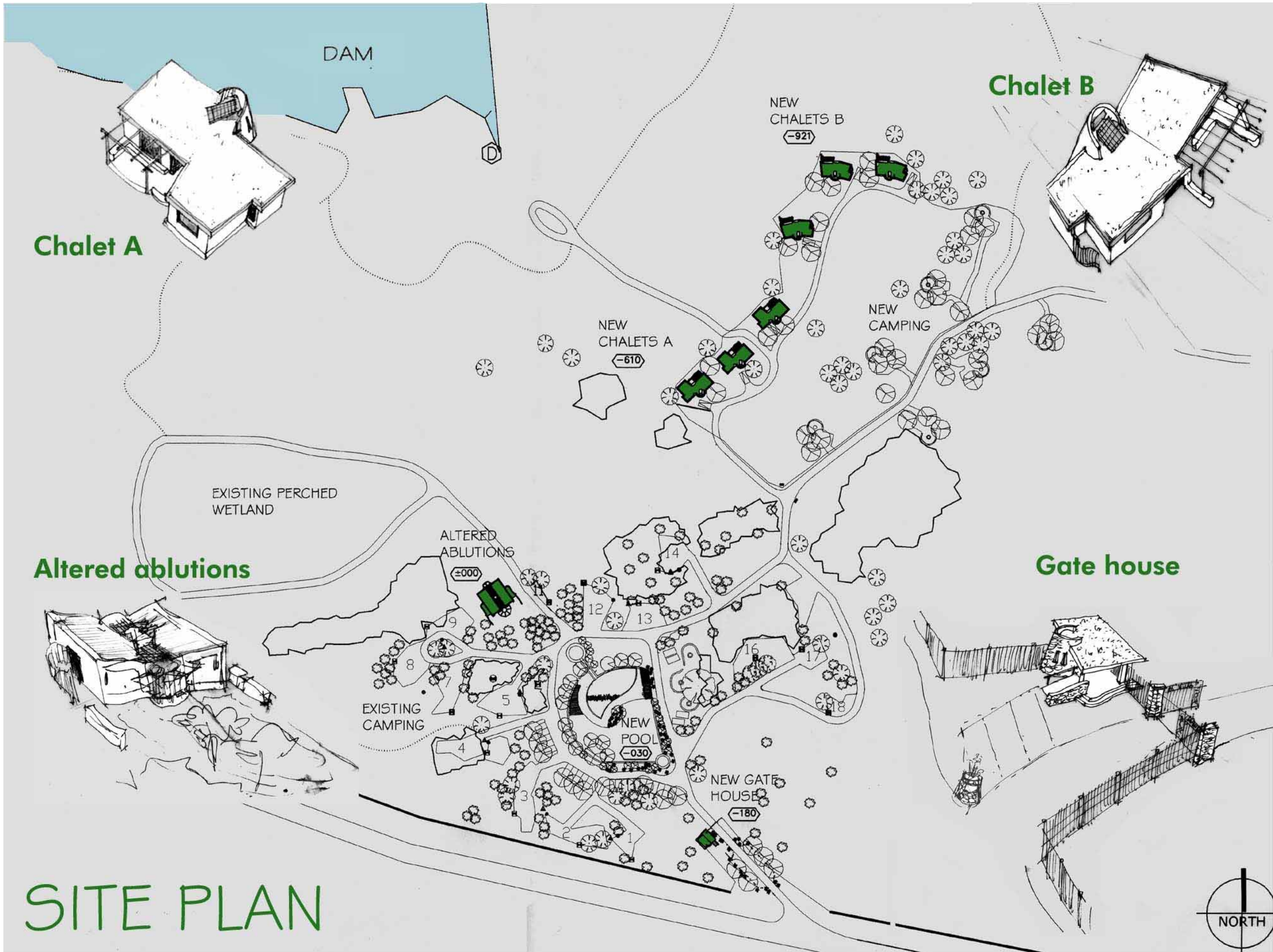
- **Careful Siting:** limited to disturbed areas. Existing vegetation provides westerly sun protection to chalets.
- **Rehabilitation** to disturbed areas.
- **Site Control:** Tender documents specify strict environmental controls.
- **Water Conservation** e.g. rainwater tanks, reed beds, grey water irrigation, efficient fixtures, compost toilets.
- **Renewable & Efficient Energy** e.g. solar evacuated-tube & flat-plate water heaters, photovoltaic panels & biogas digesters; efficient appliances & fittings etc.
- **Low Embodied Energy:** local, natural & recycled material, results in low transport & processing requirements.
- **High Thermal Performance:** Straw bale & planted roof systems, with controllable vents for cross ventilation, shutters & deciduous planted pergolas.
- **Low-Impact, Non-Toxic Materials:** Minimizes adverse global & local environmental effects.

Economic Performance & Compatability ****

- **Life Cycle Costing:** Running Costs Minimized By Efficient Technologies, High Thermal Mass.
- **Job Creation & Independence:** Local, natural materials reduces transport.
- **Stimulate Local Economy:** Project promotes local crafts & tourism.
- **Partnership Funding:** International, provincial & municipal funding.
- **Flexibility of Materials & Servicing:** Allows for possibility of future expansion.
- **Local Materials:** Ensures money circulates locally.

Contextual Response & Aesthetic Impact ****

- **Cultural Heritage:** Forms make reference to settler buildings.
- **Materials:** Plaster hues & stone soften visual impact.
- **Landscape:** Planted roofs & lean-to structures reduce visual intrusion. Stonework cones break monotony of forms & relate to surrounding rock outcrops.
- **Buildings Support Landscaping:** Grey-water irrigates new landscaping in a dry climate.
- **Building Reuse:** Energy and water saving technologies retrofitted. Renovations break intrusive scale of the ablutions.



Chalet A

Chalet B

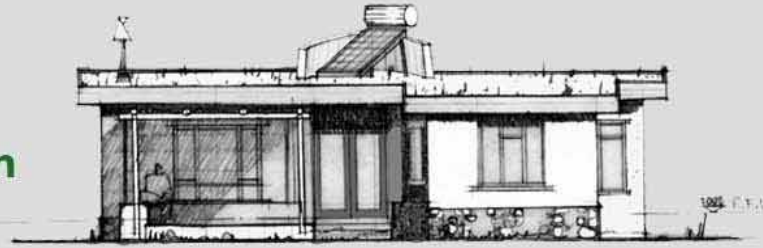
Altered ablutions

Gate house

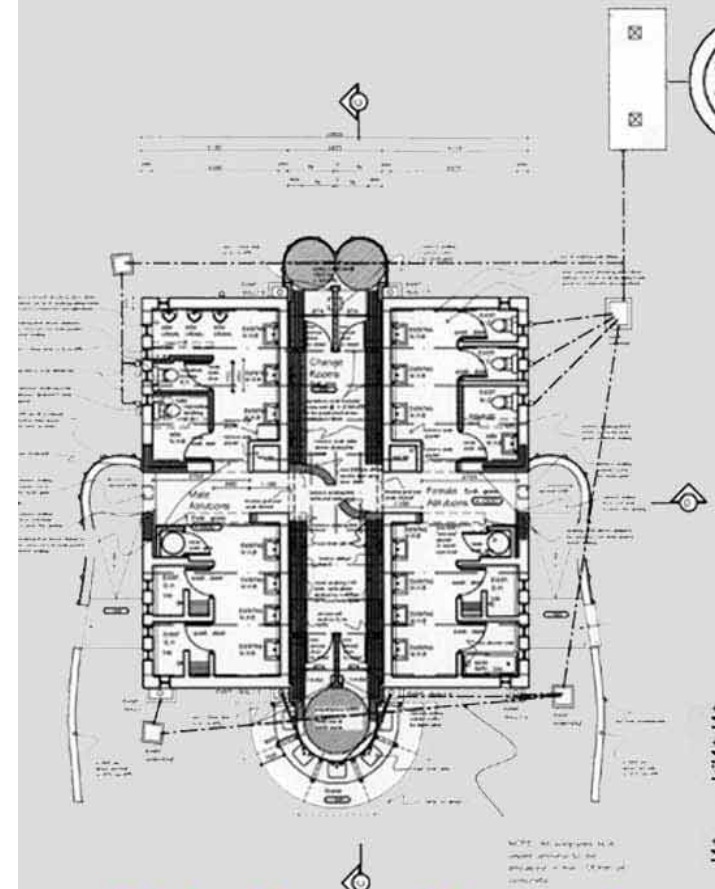
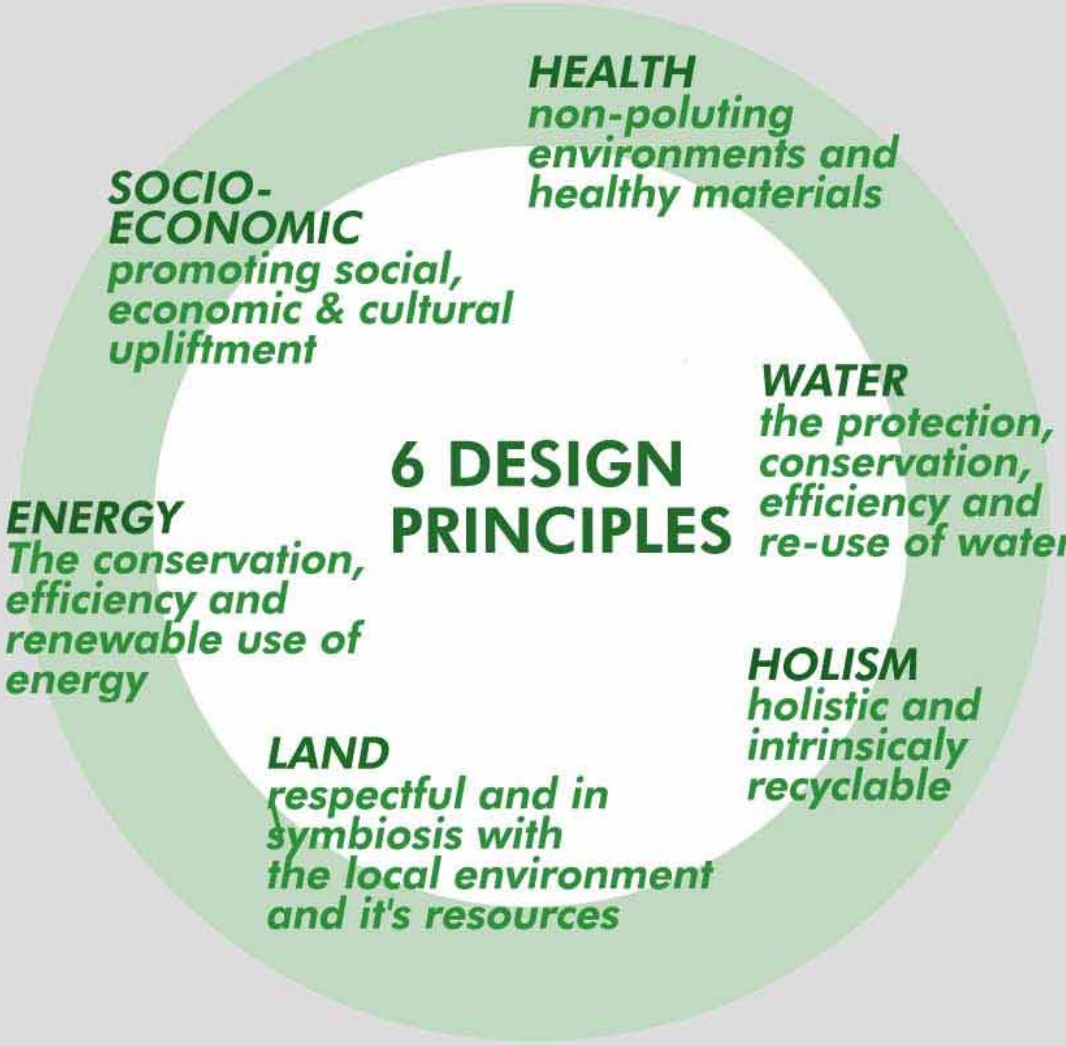
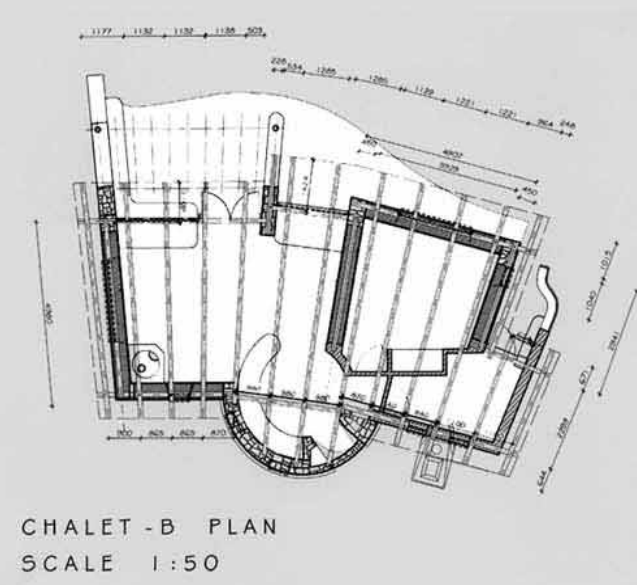
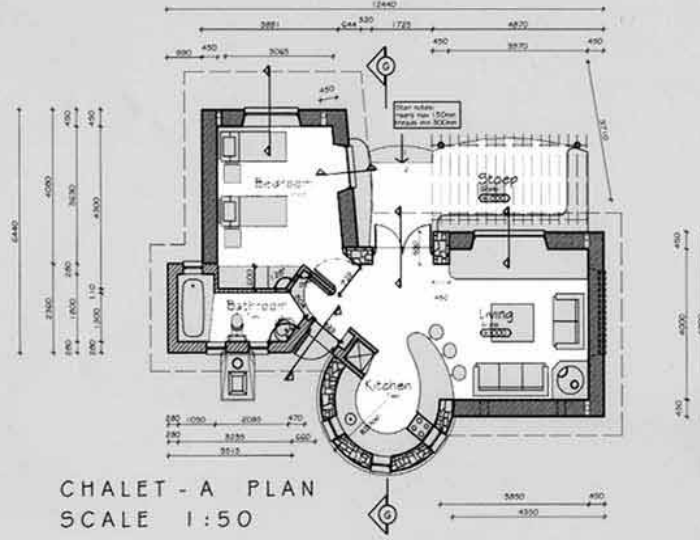
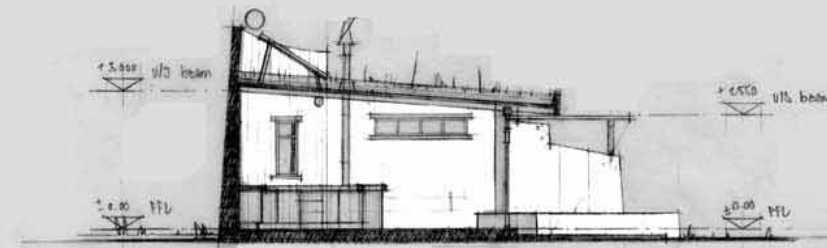
SITE PLAN



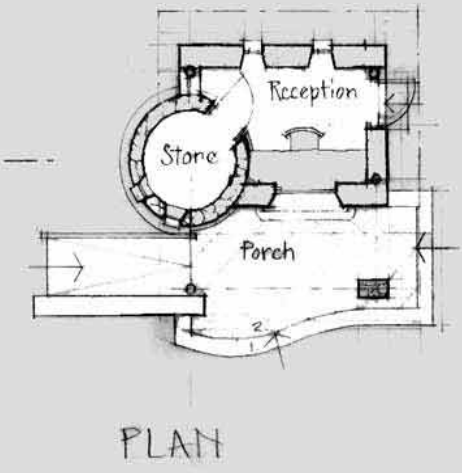
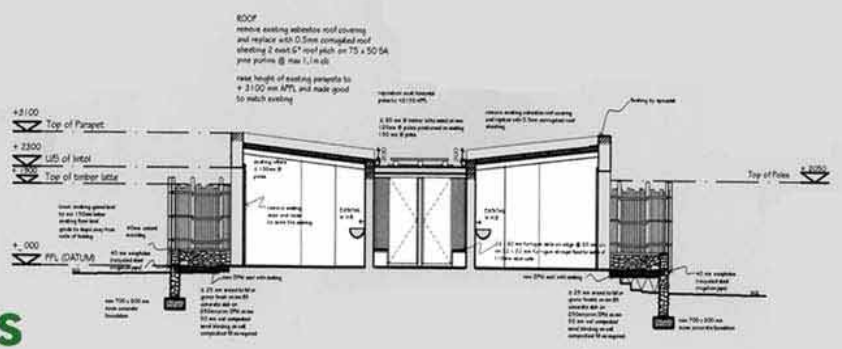
Chalet A Plan & Elevation



Chalet B Structural Plan & Elevation



Ablutions Alterations Plan & Section



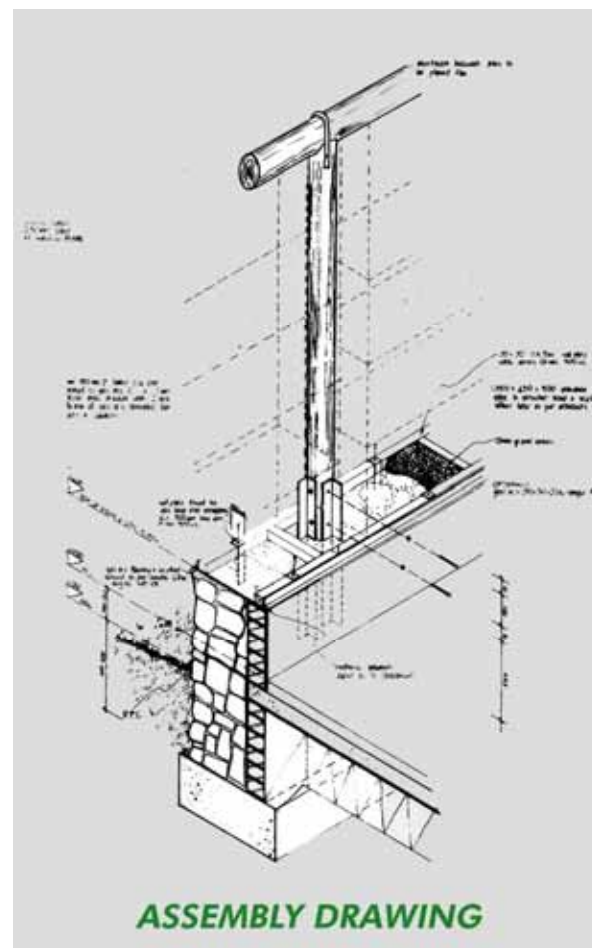
Gate House Plan & Elevation



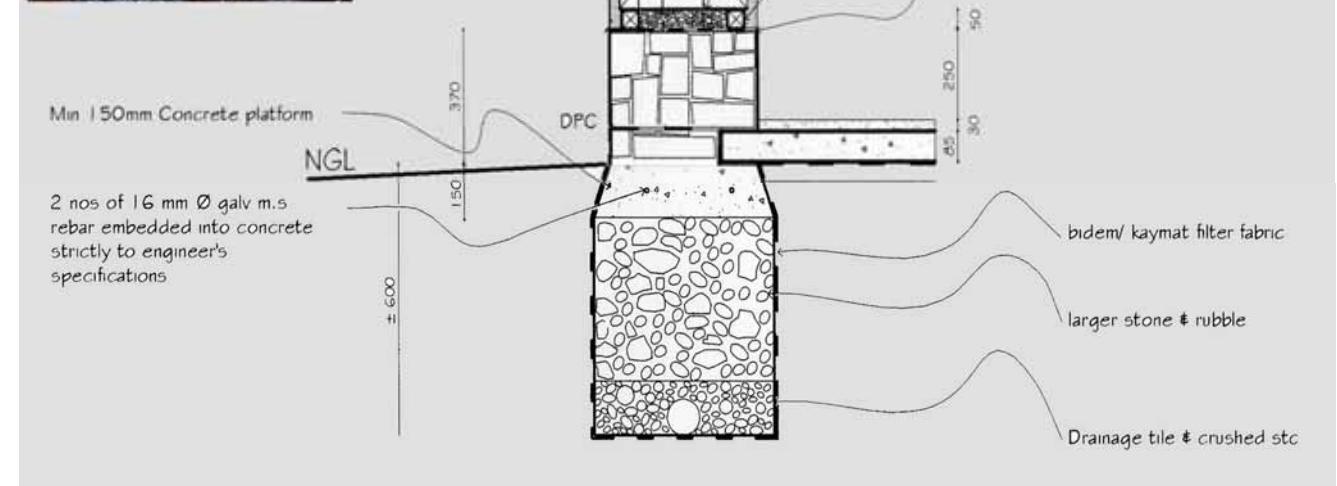
COMMUNITY INVOLVEMENT



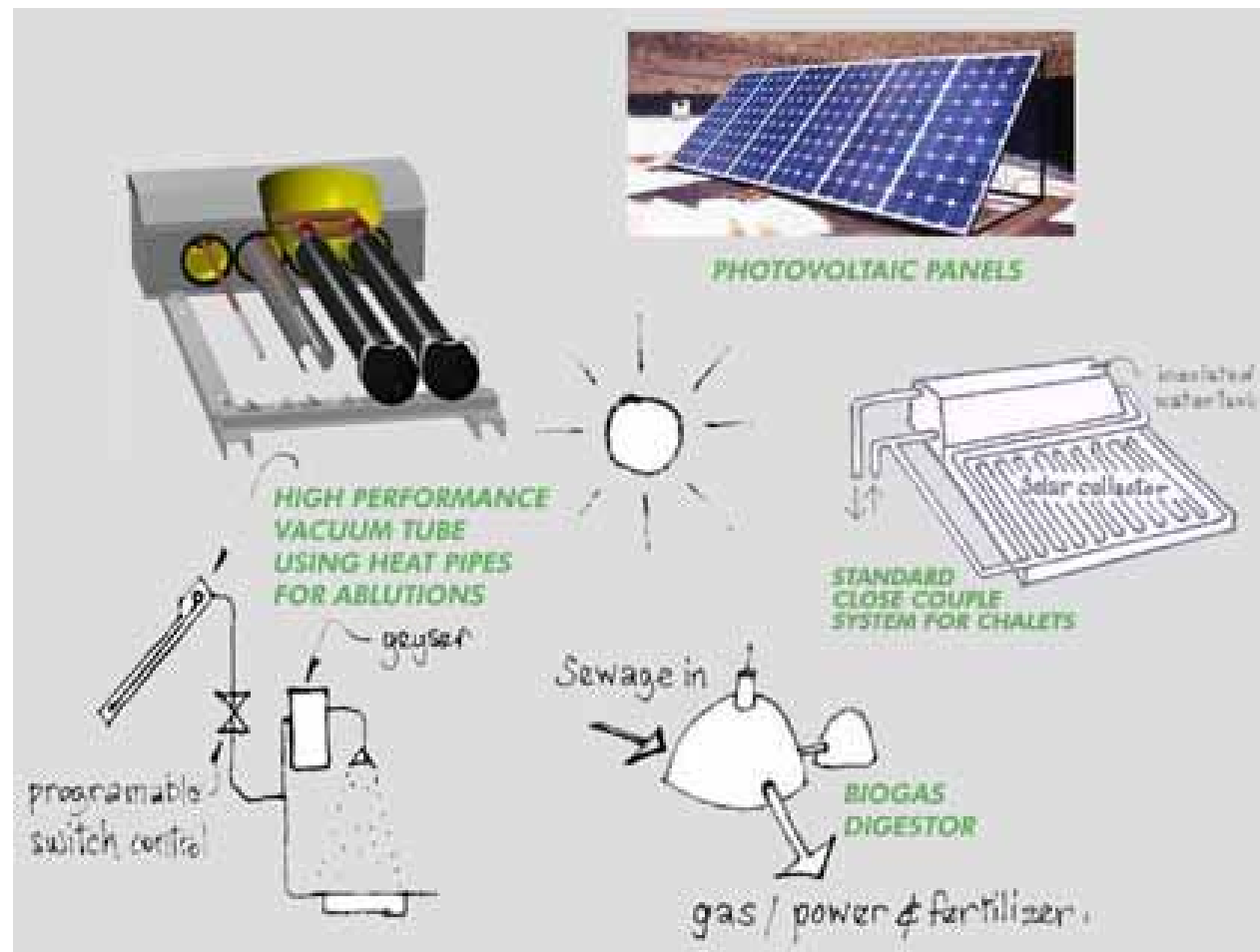
JOB CREATION THROUGH THE USE OF LOCAL MATERIALS



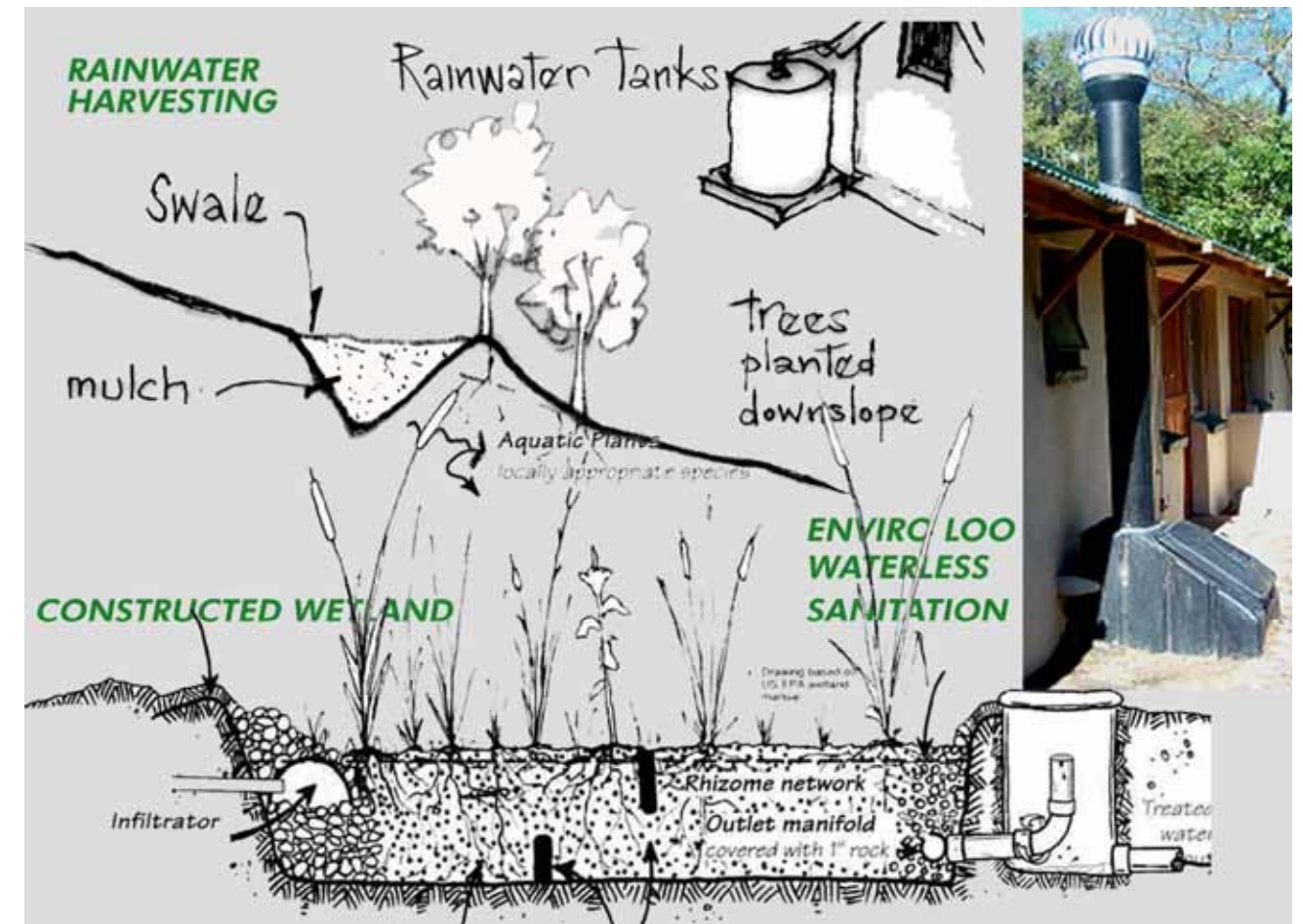
NATURAL BUILDING MATERIALS E.G. STRAW BALE



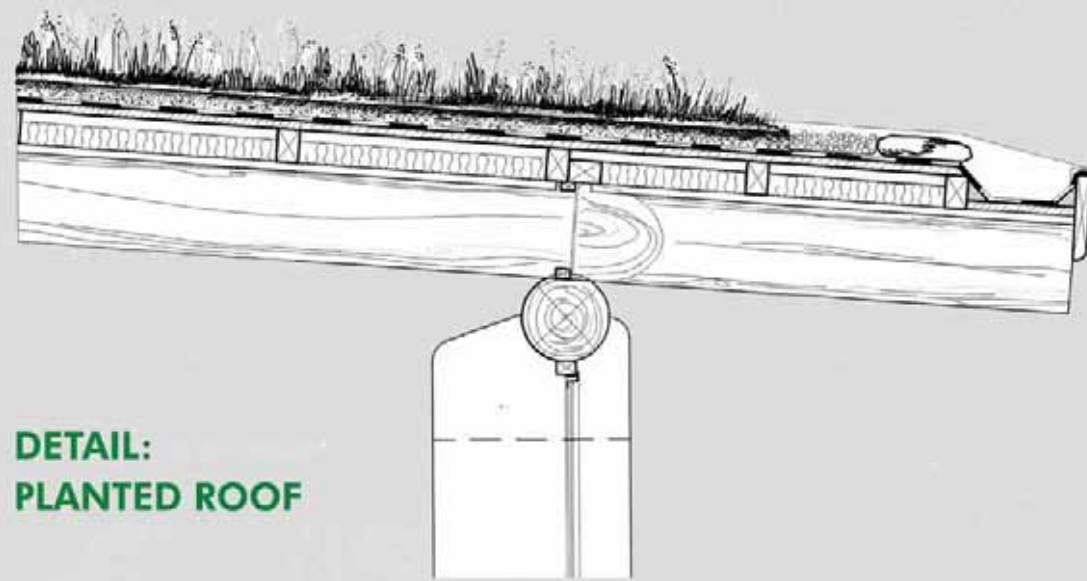
COST & RESOURCE EFFICIENCY THROUGH INNOVATION



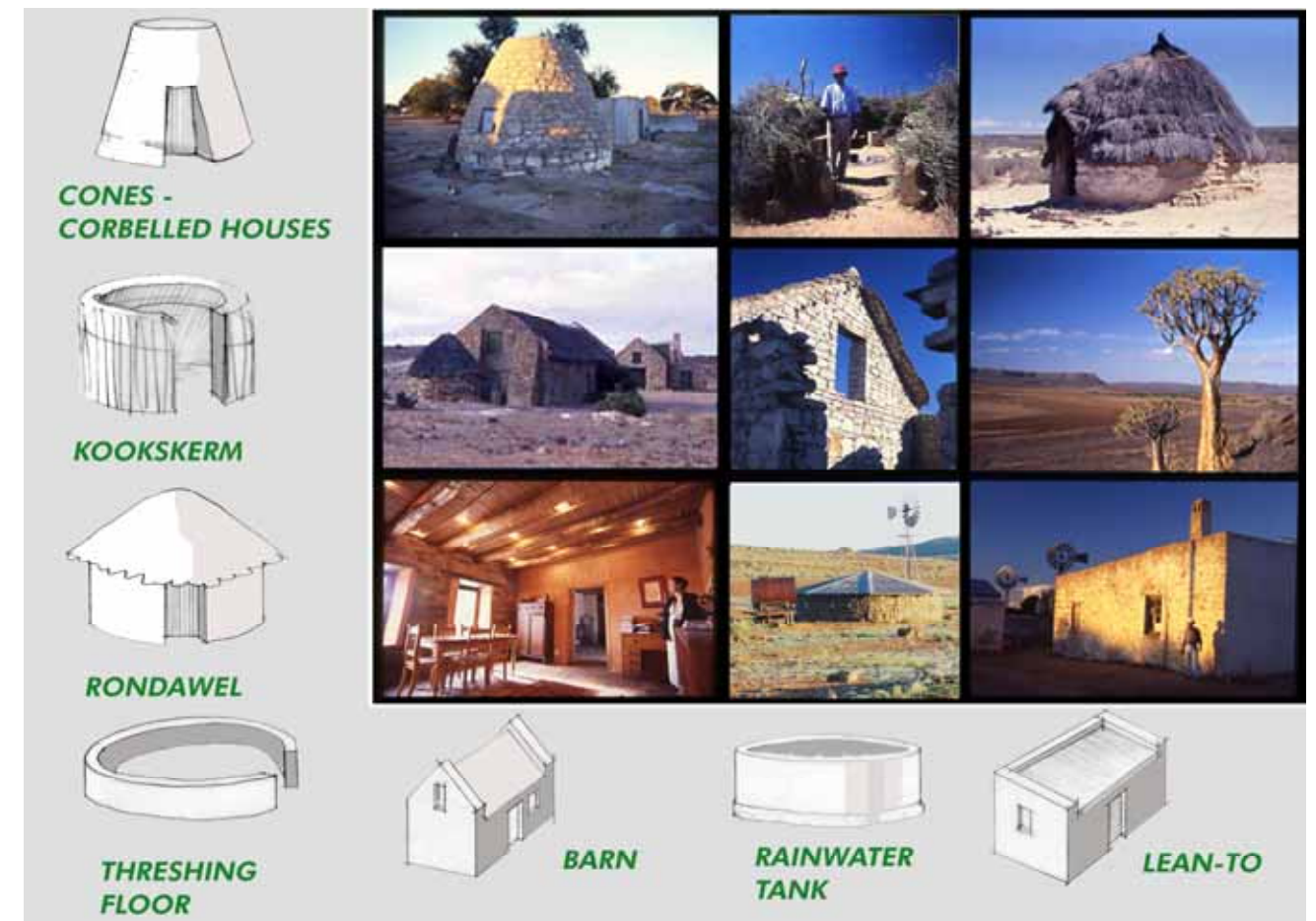
RENEWABLE & EFFICIENT USE OF ENERGY



CONSERVATION, EFFICIENCY & RE-USE OF WATER



BANKING ON BULBS



LOCAL, RURAL CONTEXT

