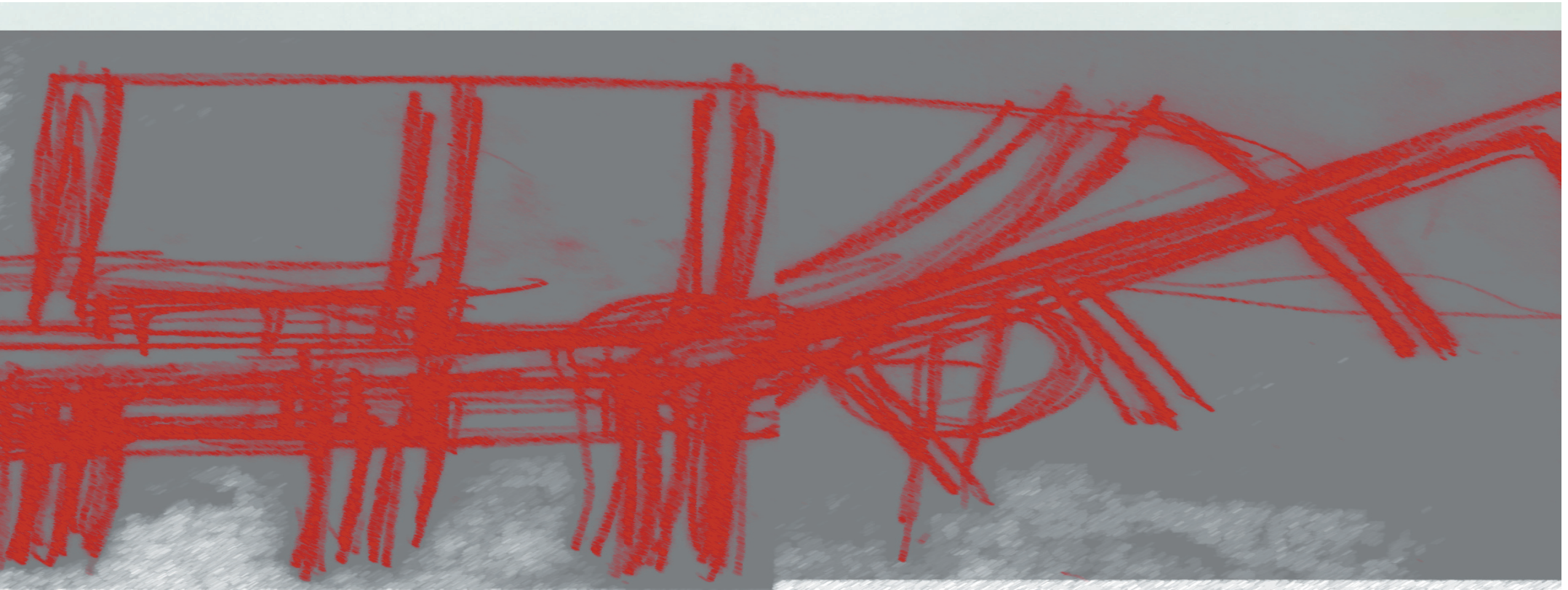


TECHNICAL INVESTIGATION



5. Baseline Criteria

5.1 Principles

The design principles behind Dingakeng Centre are based on designing a facility which is going to reflect the indigeneness of traditional medicine. Again it is to create a strong relationship between traditional and modern/western medicine. Since the facility is going to be built within the hospital boundary, it should not have a negative impact.

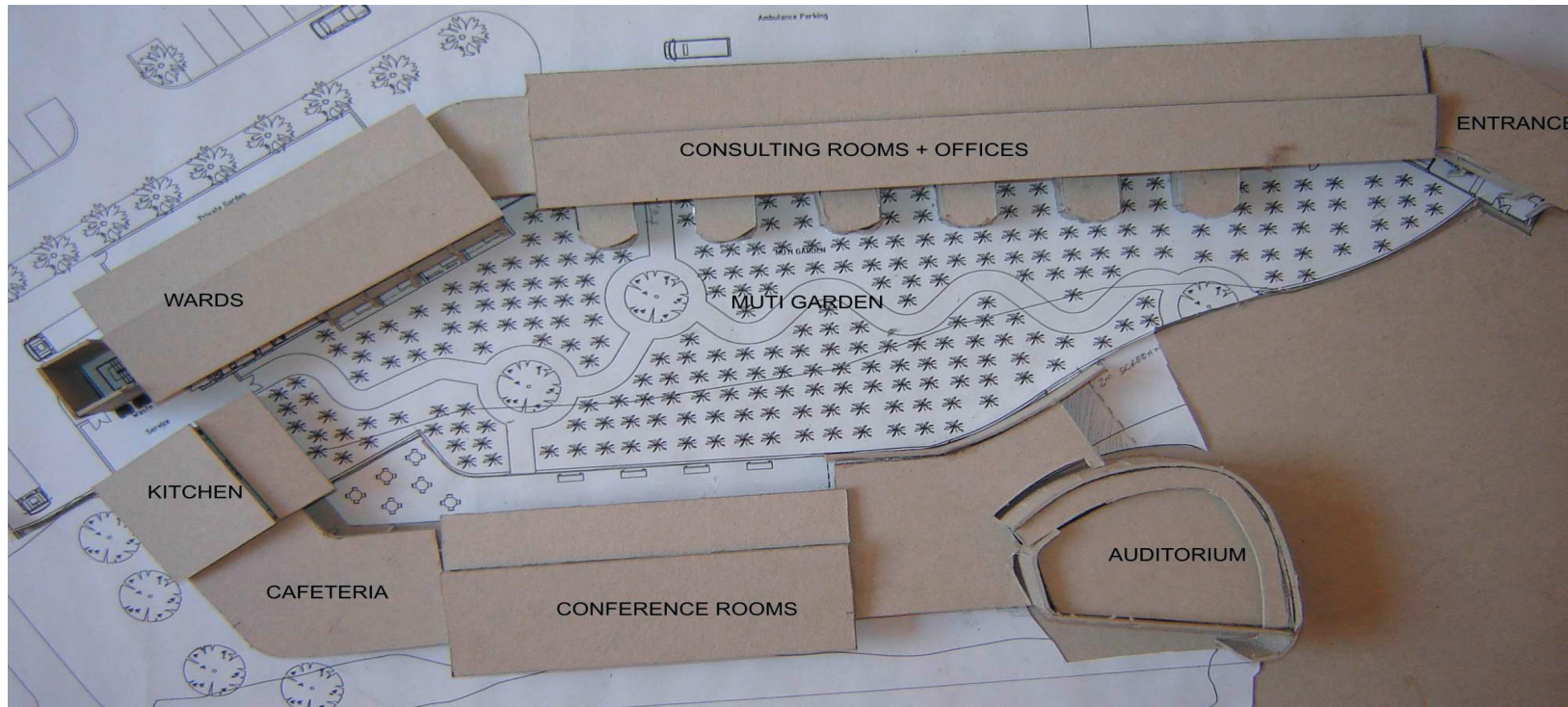
Since Dingakeng Centre is mainly going to have consulting and conference facilities, the centre should also be educational. People who are ignorant about traditional health practice will be free to come and learn about the practice. The purpose of a muti garden within the site will be mainly educational. People will have the privilege of learning about traditional herbs. In the past practice of traditional medicine used to be private, traditional health practitioners were not willing to share their knowledge with anyone. Therefore, the centre is going to encourage transparency about traditional medicine.

5.2 Occupant Comfort

Ventilation

Dingakeng Centre is going to be ventilated through natural means; the areas that require artificial ventilation is the auditorium (including projector room and translators' booth). The rest of the building is designed such that it can be ventilated naturally. The rooms are oriented so that cross-ventilation can take place through openable doors and windows.

High-level windows will be helpful to get rid of hot air especially during summer. Pretoria has very low wind speeds which is ideal for the wards on both floors. The cold room need desired temperatures to remain constant and therefore has a separate HVAC.

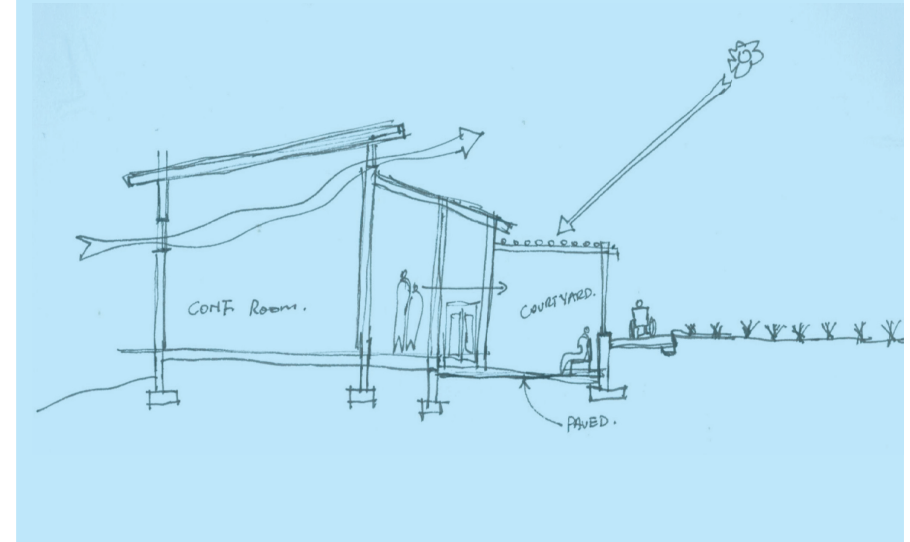
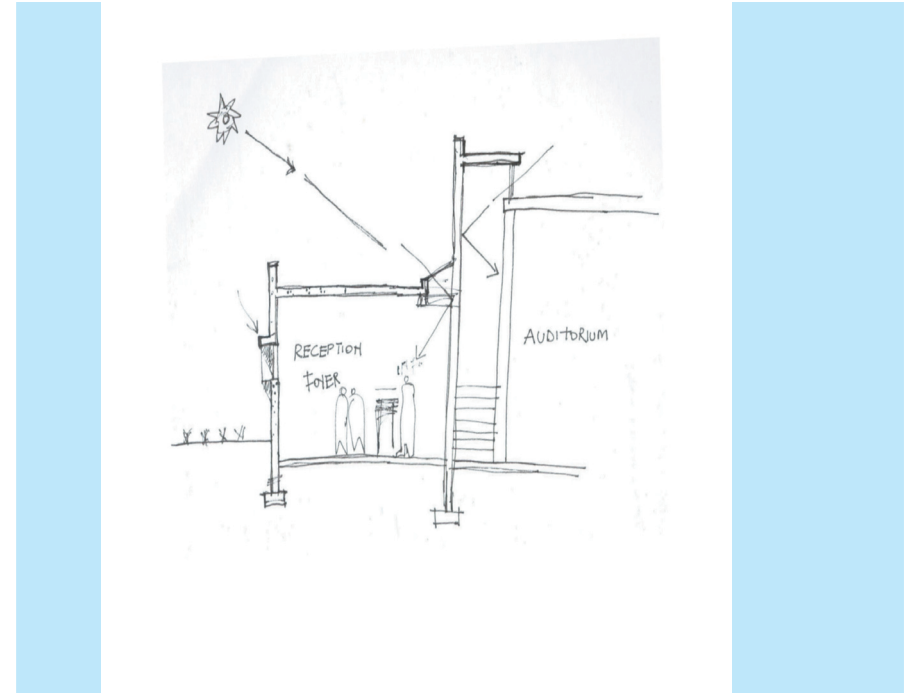
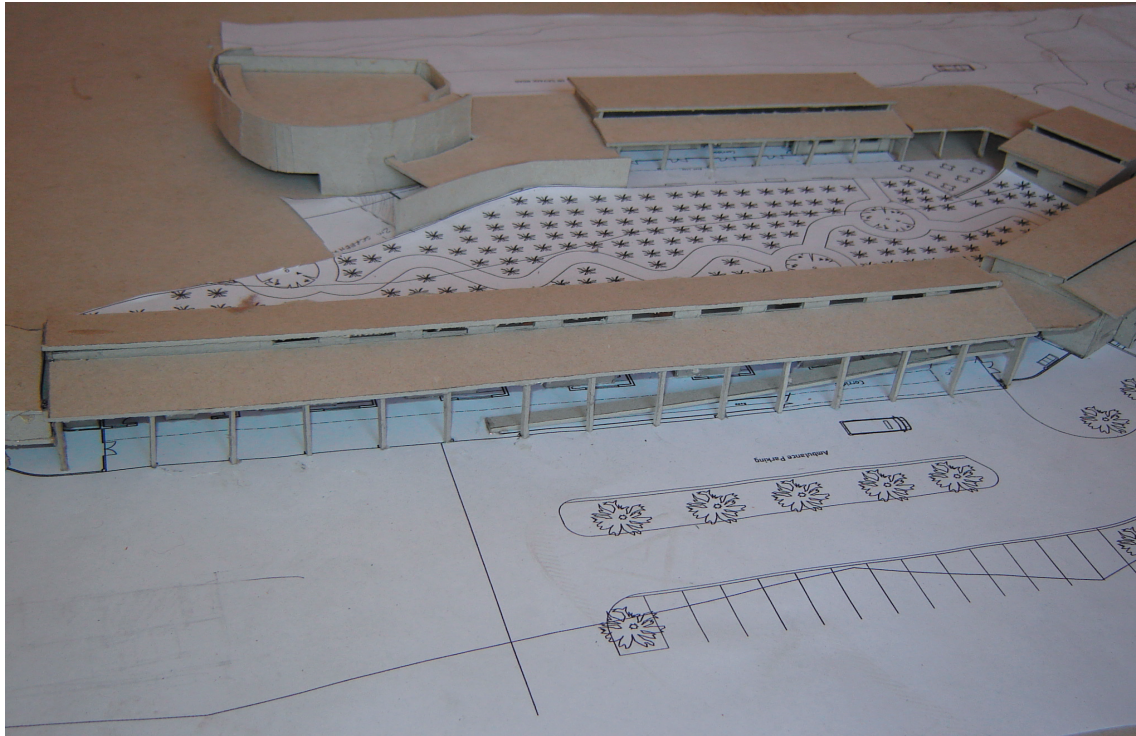


Thermal Comfort

It is envisaged that rainwater in the detention pond will help reduce heat through evapotranspiration. The windows will also be screened to avoid direct sunlight during summer. The sun screens are designed in such way that they can allow winter sunlight to penetrate into the rooms.

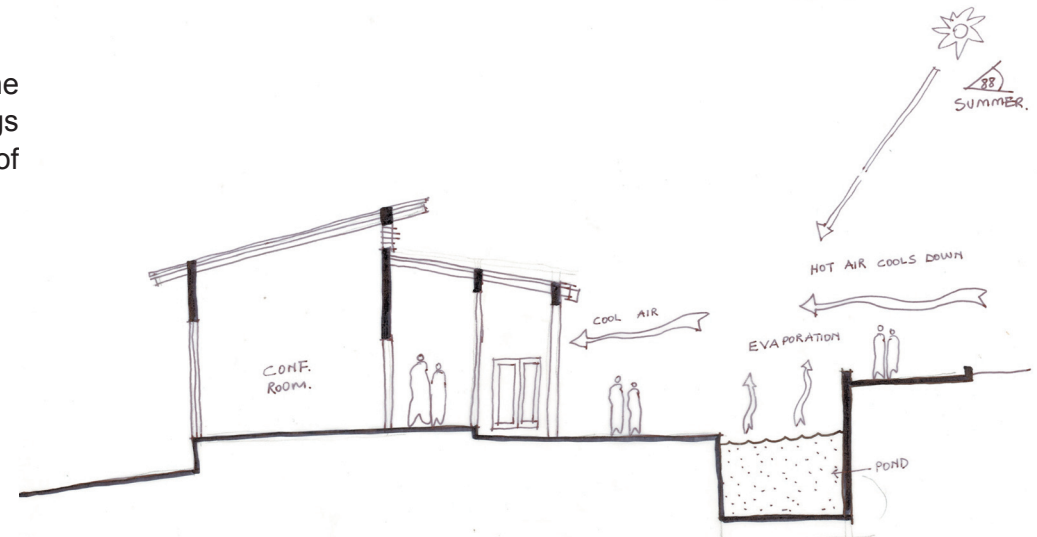
Lighting

Glare causes high occupant discomfort and occurs when a bright source is viewed from an area in relative darkness. A room of 3m high and 6m depths should achieve a daylight factor of 1.5 - 2% at the back of the room to eliminate glare. This is achieved through a 20% glazing to wall ratio (Daniels 1998: 72).



Views

The site is on the edge of the Hospital Hill, therefore, there is a clear view of the CBD on the south. UNISA and Reserve Bank are some of the visible buildings from the site. The North/South orientation of the building also allows views of the Apies River. The Nursing College is also visible on the south-east.



Noise

The only areas of Dingakeng Centre susceptible to traffic noise are the restaurant, kitchen, and conference rooms on the south. The auditorium is going to be sound proof and it is not going to have openings facing the street. The wards and consulting rooms are not going to be bothering by noise, therefore, they are going to be more private.

Indoor/ Outdoor connection

The stoep and balconies create a strong visual connection between the internal and external environments and blur the boundary between the two. Physical connections are made by having sliding doors opening to the outside on both floors, especially in the wards. Patients will be able to access the muti garden directly from their rooms. It is envisaged that this continuous interaction with the garden will speed-up the healing process.

5.3 Inclusive Environments

Transport

There is a proposed formal taxi rank next to Dingakeng Centre. The proposed taxi rank is going to be linked to Bloed Street taxi rank and the long distance taxi rank along Dr Savage Road. Next to the proposed taxi rank there is going to be a *muti* and fruit/vegetable market. There is a lot of public transport activity already along Dr Savage Road already, therefore, a public transport terminus will be a good idea. This will also ease traffic along the road.

Pedestrian movement is encouraged along the building; and between the building and the hospital.

Circulation

The maximum height of Dingakeng Centre is two storeys, therefore, vertical mechanical circulation is unnecessary. A ramp and three staircases provide vertical circulation. Horizontal circulation is mainly outside preventing artificial lighting and ventilation. These walkways are weather protected by a number of screens. All routes between and within buildings are smooth and navigable by wheel chair.

To Marabastad



Changes in level

Dingakeng Centre is a two storey building. Therefore, there is a provision of 1:12 ramp to cater for the disabled people on wheel chairs.

Toilets

Toilets are located on each floor and on every wing of the building. There is sufficient number of toilets for the disabled people.

5.4 Access to Facilities

Childcare

The close proximity of the childcare facilities in the Femina Clinic omits the need for such a facility at Dingakeng Centre.

Banking

Secure banking facilities are located at Sancardia shopping mall 2km away from the site.

Retail

There is going to be retail facilities next to the proposed taxi terminus. Therefore, people will be able to buy *muti*, vegetables and fruits on their way home.

Communications

Personnel will have access to the internet and telephone facilities in their offices. Major postal services are offered at the main post office at Church Square about 1,5km away from Dingakeng Centre.

5.5 Participation & Control

Environmental control

Opening windows and adjustable screens will give occupants a certain amount of control over ventilation and lighting. Task lighting will give occupants control over their immediate space but ambient lighting will be sensor activated at night, which can achieve energy savings between 25-50%.

User adaption

Furniture and fittings (i.e. chairs and tables, etc.) to be arranged by the tenants especially in the consulting rooms. Provision made for the personalisation of spaces if desired. This may include pin boards, choice of colours, etc.

Social spaces

Stoeps, balconies, and courtyard provide spaces for interaction. This social spaces are designed to engage with the muti garden.

Local community

Dingakeng Centre is based around awareness of cultures and knowledge transfer so that community in general is encouraged through the centre. Almost every area of the centre is open to the public.

The auditorium is open for public use as long as it is booked in advance. The public is welcomed to view the muti garden and ask questions.

5.6 Education, Health & Safety

Education

Public tours and exhibitions through Dingakeng Centre will provide information on medicinal plants and their medical properties. A strong emphasis will be made on origins of use, i.e. the communities that use them, spiritual associations, ceremonies, etc.

Visitors will also learn about different types of traditional health practitioners. They will learn that different traditional healers specialize in different sicknesses. For example, there are *inyangas* who specialize in headache, heart disease, skin disease, etc.

Health

First-aid kit to be available at the reception areas. Information to be available on issues of health, safety, and career development

Indoor air quality

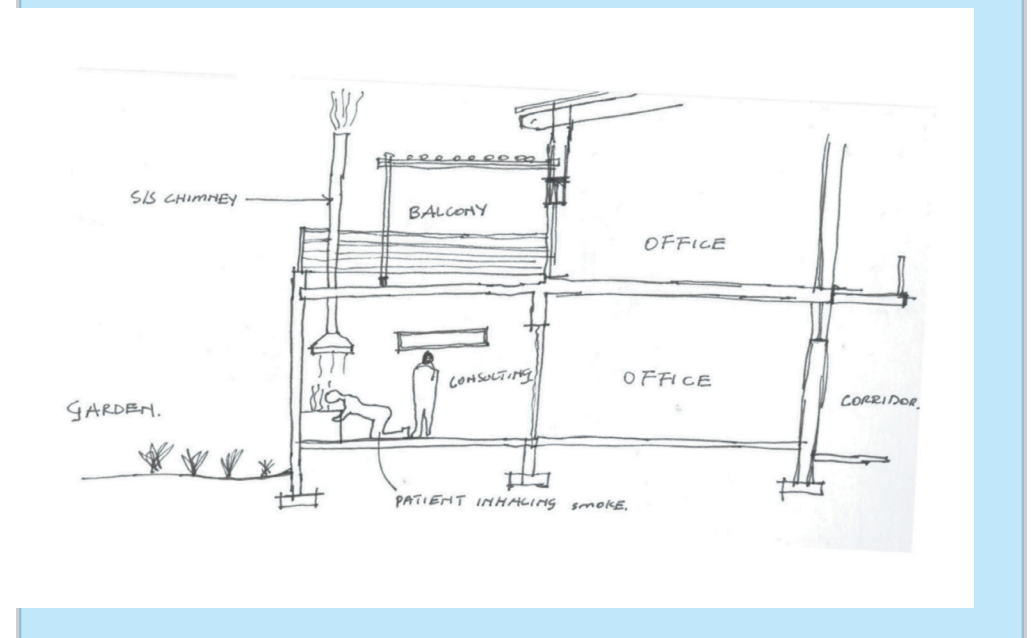
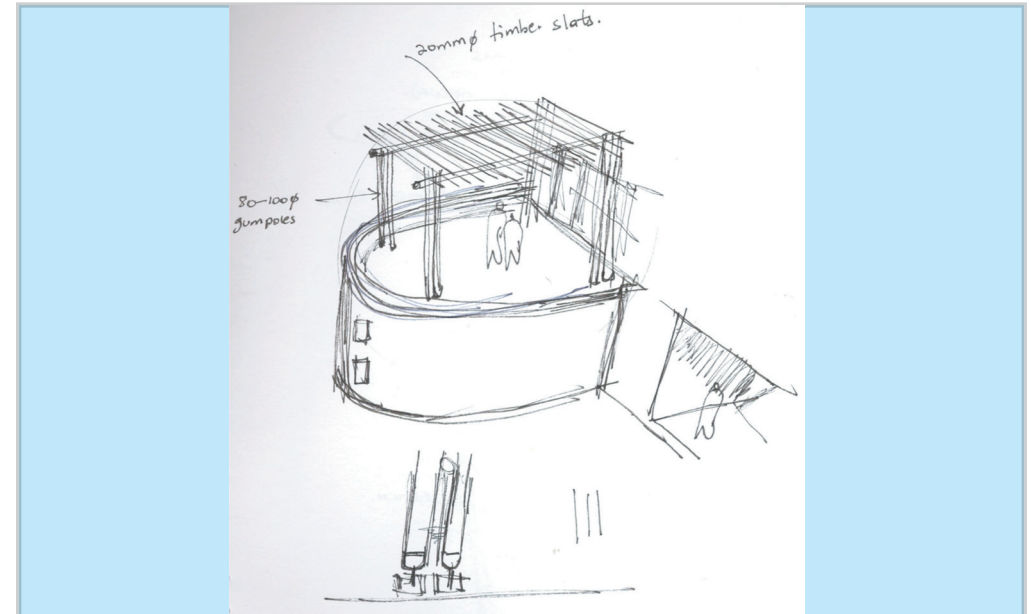
Cross-ventilation will be encouraged through the design of the building. Windows are positioned to encourage ventilation. Air will be taken from outside and the use of recycled air will be avoided. This will ensure human comfort inside the building. Only the auditorium will use artificial ventilation due to the size and number of people who are going to utilize it.

Exercise & recreation

Large green open spaces that already exist will be retained allowing occupants to utilize it.

Safety

The building to comply with health and safety requirements. Regular checks in place to ensure these are complied with.



5.7 Local economy

Local contractors

80% of contractors and workforce based within Tshwane not more than 40km away from the building.

Local materials and components

80% of materials and components are to be sourced within 200km radius from site. Only special materials and components not available around may be sourced from suppliers more than 200km away.

Repairs and maintenance

All repairs and maintenance required by the building (including servicing of mechanical plant) can be carried out by contractors within 200km of site.

5.8 Efficiency of use

Occupancy schedule

Both male and female wards will be used during week days and weekends. The offices and consulting rooms have been intergrated to be effectively used by the occupants. The auditorium will be effectively used by the occupants and the public. Obviously, the public will have to book the auditorium in advance. The occupants and public will eat at the cafeteria. Therefore, the entire building will be effectively used.

Management of space

The offices are the only non-shared working spaces.

Disruption & downtime

Photovoltaic panels are used in Dingakeng Centre for electricity generation and to serve as back-up during power cuts.

5.9 Adaptability & Flexibility

Structure

The structure is based around a concrete column and slab system. The structure is permanent but allows for flexibility through the in-fill panels. The auditorium is less flexible which is constructed of concrete.

Service spaces

Services run through a series of vertical and horizontal ducts. There is a suspended ceiling in the auditorium to allow service space above ceiling. All horizontal and vertical ducts are to be accesible.

5.10 Ongoing Costs

Maintenance

Materials specified on the building requires low maintenance. All plant and fabric have maintenance cycle of at least two years. Low or no maintenance components selected (doors, windows, iron mongery, etc.). Maintenance can be carried out cost effectively (e.g. replaceable fttings such as light bulbs can be easily reached and replaced).

Cleaning

Measures taken to limit requirement for cleaning. Hard wearing solid flooring specified (limited carpet spicified). Windows are easily accessible for cleaning.

Security

Measures are taken to limit requirement and costs of security. Therefore, Dingakeng Centre is going to make use of the security of the Tshwane District Hospital

5.11 Capital Costs

Consultant fees

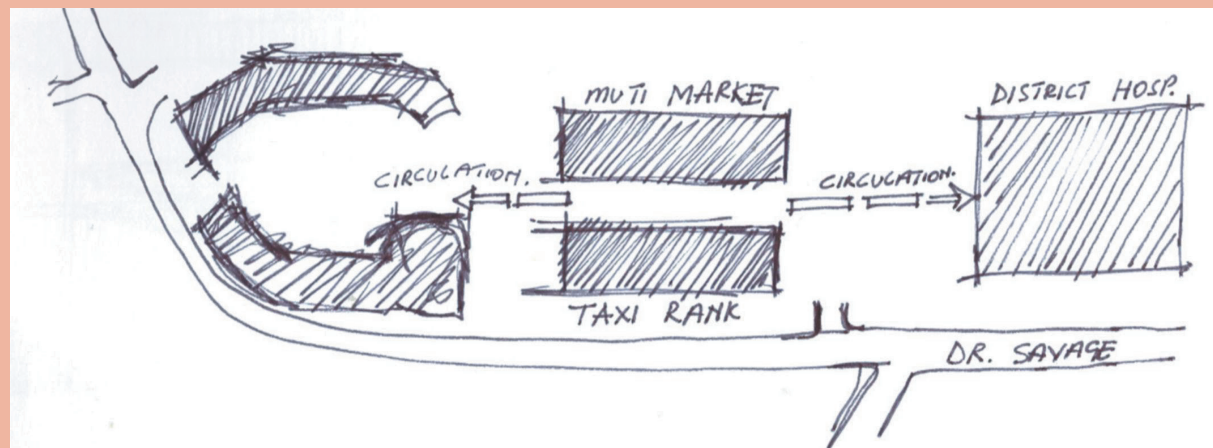
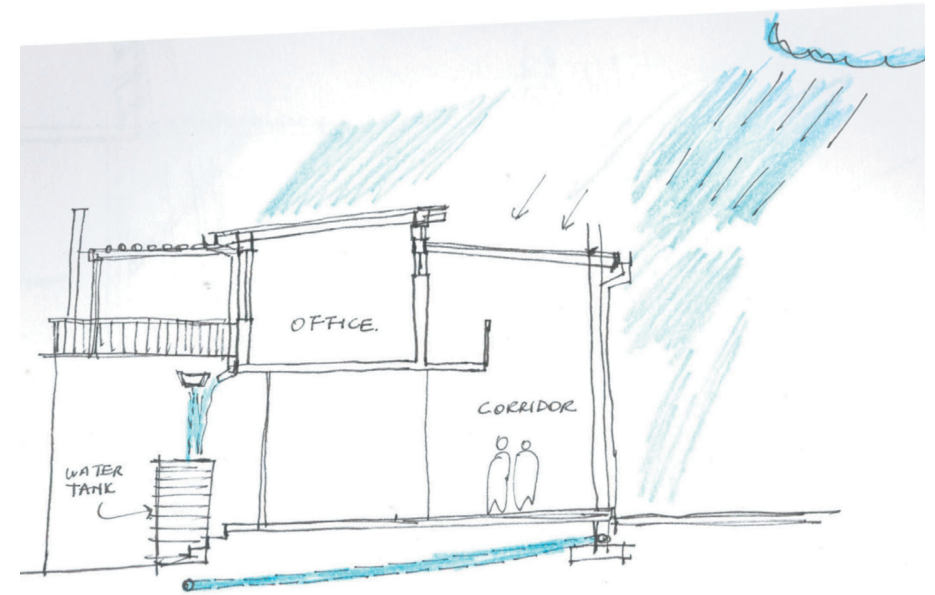
Consultant fees not just calculated on total project cost basis. Incentives provided to consultants to reduce capital cost and ongoing costs.

Build-ability

Building designed to be easily and cheaply built. Building form simple. Replication of elements and components.

Construction

Construction approach designed to reduce initial capital cost of the building. Building undertaken in a series of phases. Building built as shell first with finishes to be added later.



5.12 Water

Rainwater

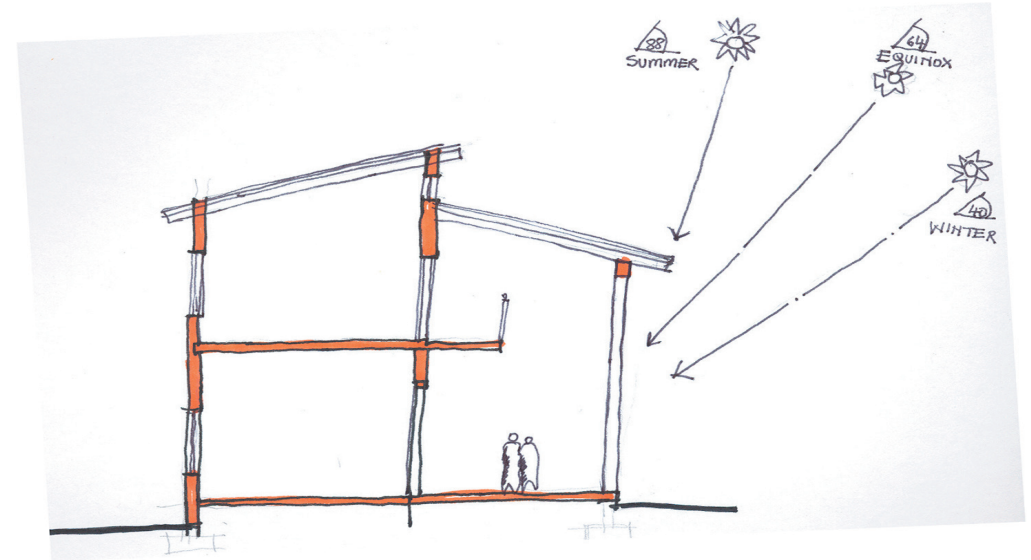
The relatively high amount of vegetation throughout the project requires large amounts of irrigation, it is therefore important to collect as much rainwater as possible. Therefore, rainwater will be collected from the roofs of the buildings and later used in the muti garden for irrigation.

The annual amount of rainwater that can be collected as runoff from the roof is indeterminable as many factors influence, namely:

- amount of rainfall in one shower;
- temperature

Runoff

Impermeable surfaces are limited to walkways and parking spaces. This allows for rainwater to filter back into the water table. The water on social spaces will be directed towards the detention pond. The water will then be released when needed for irrigation on the muti garden.



5.13 Energy

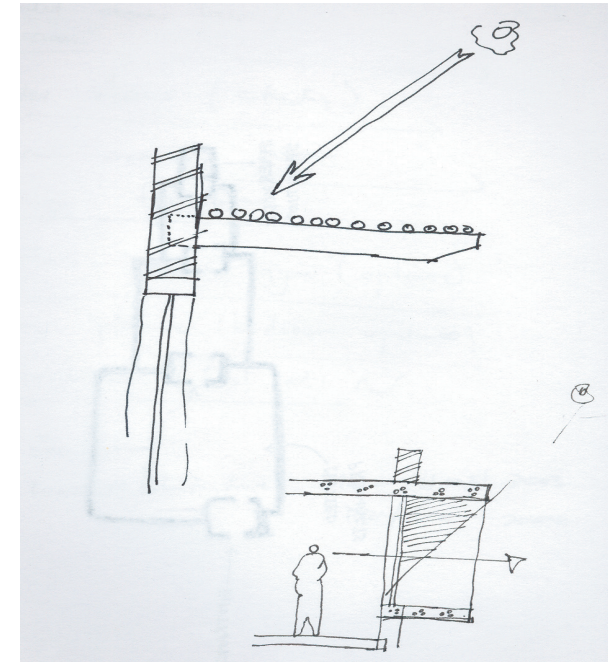
Location

Building located less than 400m of taxi terminus

Appliances & fittings

15W fluorescent light bulbs are used instead of regular 75W light bulbs. The lux provided is the same but the fluorescent bulbs produce 60W less heat energy.

Throughout Dingakeng Centre, reduced flow-rate taps are used which contain a spray nozzle that reduces the water flow rate by 70% (Edwards 1999: 123). 6Litre flushing toilets are used of the regular 7.5 litre toilets.



Renewable energy

Pretoria offers little opportunity for wind-generated power but great potential for the use of photovoltaic cells as a renewable energy means. The effective implementation of needed renewable energy measures requires the immediate and sustained installation of renewable energy sources. Photovoltaic cell systems resist vulnerability to power loss, are reliable, low maintenance, easily expanded, and incur little operating cost.

5.14 Recycling & Reuse

Organic waste

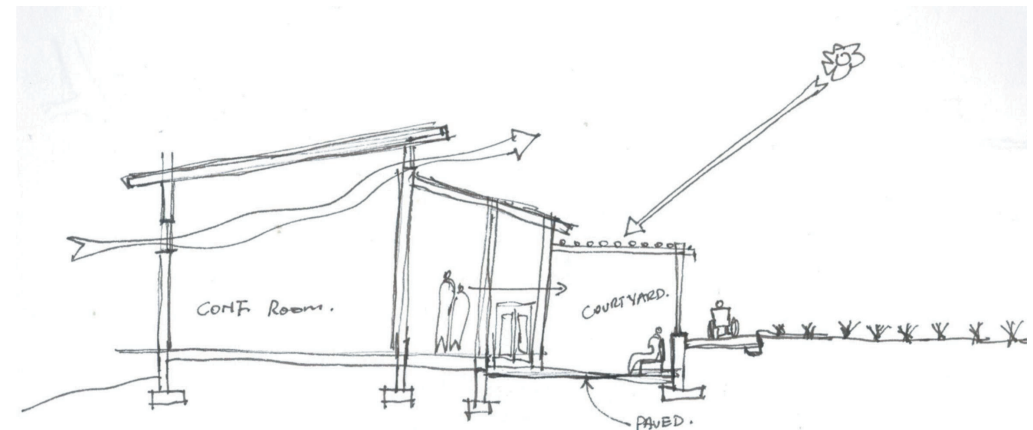
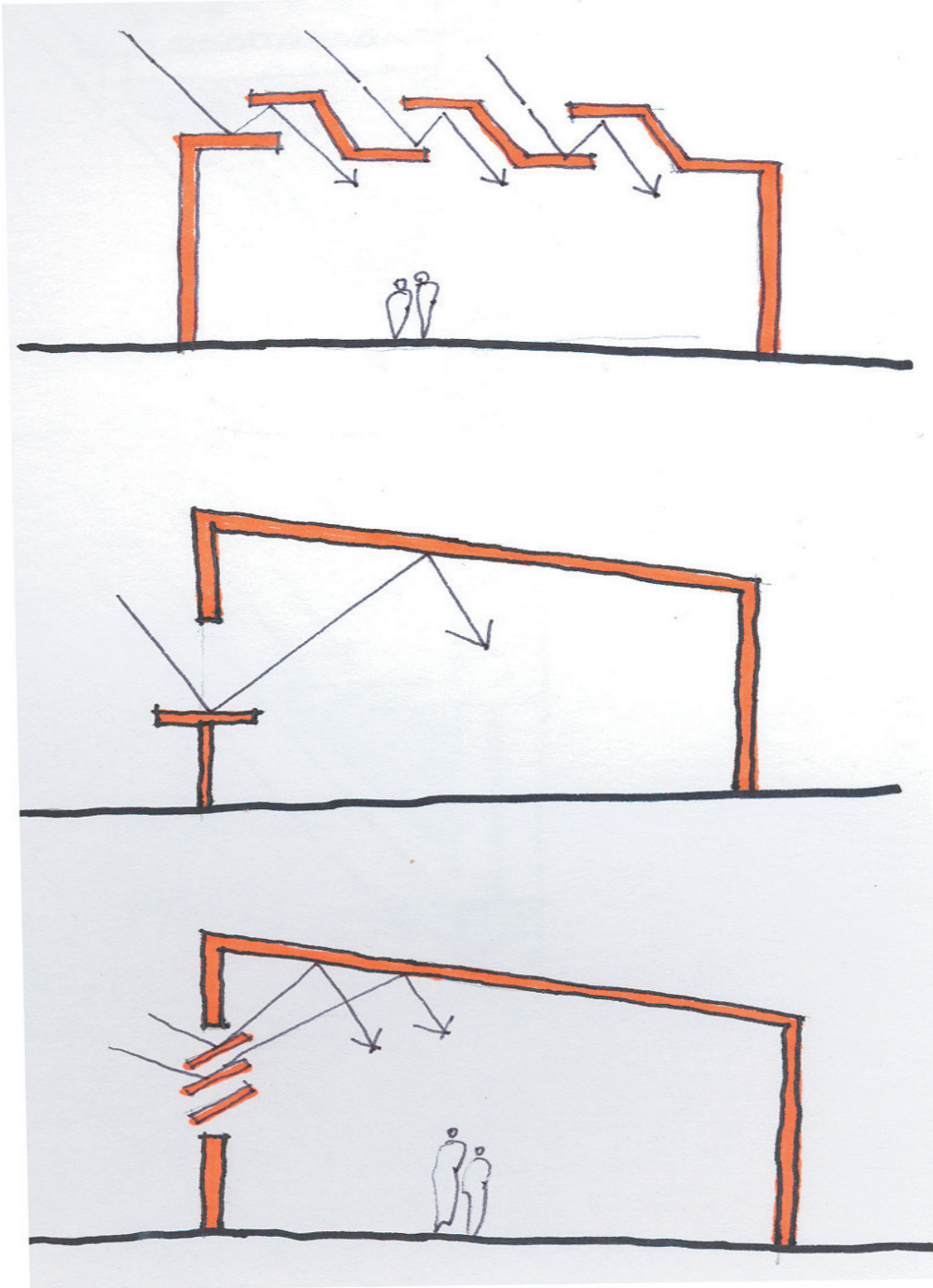
Organic waste from the building and the garden will be collected and used as compost for the muti garden.

Inorganic waste

Inorganic waste will be sorted on site at the source through the use of recycling bins

Toxic waste

Arrangements are made for the safe disposal/ recycling of harmful substances.



5.15 Site

Brownfield site

Dingakeng Centre is going to be constructed on a site already previously built on.

Neighbouring buildings

Dingakeng Centre does not have harmful effect on neighbouring buildings (e.g. over-shading) where access to light is important.

Vegetation

The site has extensive vegetation. Vegetation around the building can improve the microclimate control within the building.

5.16 Materials & Components

Embodied energy

80% of the building materials and components are made from materials and components with low embodied energy. Materials used are locally made and sourced like timber, concrete, and brick masonry.

Concrete

Reinforced concrete boasts high specific heat capacity, very high compressive strength, and the ability to span large distances. Whilst it is non-renewable, it is a low-demand material to manufacture; it is also re-usable (e.g. gabion walls). Concrete requires high energy during production process.

Timber

Timber is an environmentally friendly material and has low embodied energy. The advantage of timber is that it is a renewable material. During production it does not produce harmful gases and it does not pollute the environment. Timber has to be treated before it can be used. It also has to be maintained to increase the lifespan.

Brick masonry

Brick masonry has high heat capacity and high compressive strength. Brick masonry is also re-usable. The disadvantage is that it is a non-renewable material and requires high energy during production. Facebrick, which is used on the elevations, require low maintenance. Just like concrete, brick masonry has no energy-generating qualities but can be used as heat store.

