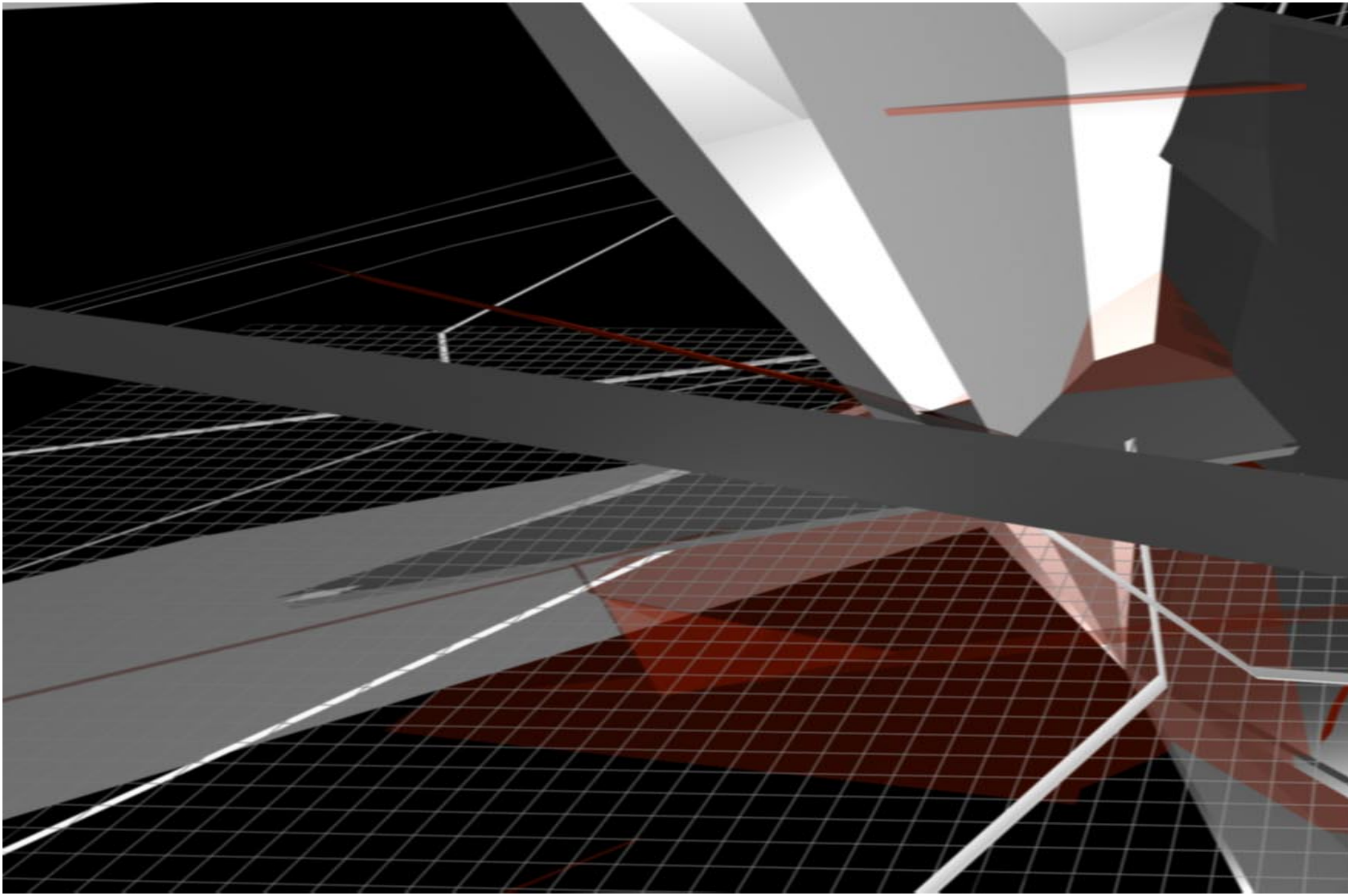


BASELINE CRITERIA

Fig.118

Fig.119

#01 SOCIAL CRITERIA

#01.1 OCCUPANT COMFORT

The clients and visitors of the heliport and boutique hotel will mostly be wealthy individuals and tourists, politicians and employees of large multi-national corporations. Occupant comfort are therefor particularly significant. Visitors will tend to spend less time in uncomfortable spaces, which will impact the financial performance of the building negatively. Employees are also less likely to be productive in less comfortable spaces. Happy, content workers are productive workers.

#01.1.1 natural lighting

The use of light is an integral part of the design process. Not only can light create an array of moods and effects in or around a building , to little or to much light can be harmful to performance of a building. Long exposure to bad lighting conditions can even be detrimental to the occupant's health. Daylight have a positive effect on the physiological and psychological well-being of occupants and all interior space should receive daylight. Glare must be minimized by using screens or high tech glass. Where interior spaces receive little or no natural light, skylights should be used.

#01.1.2 noise

The N1 highway and Atterbury road already generates a substantial amount of ambient noise. Add the noise of helicopters coming and going all day long, and noise becomes a major issue for building occupants. The building must therefor be well insulated against airborne sound. The amount that a building element (wall, roof ,floor) reduces sound are determined by the type of material that the element is made of. Generally, materials with a high surface weight (concrete)have better sound reduction qualities than materials with a low surface weight (aluminium). Should light weight materials be used, it follows that insulation with superior sound reduction and absorption qualities be used.

#01.1.3 ventilation + air quality

As openings of any kind reduce the effectiveness of sound reduction and insulation, natural ventilation via openings (open windows and doors) will not be possible. This means that a mechanical ventilation system will have to be installed. The ventilation system will also have to serve as an air filter, as the air around the highway are highly polluted. (Another reason why natural ventilation is not viable.) Carbon dioxide fumes caused by vehicles are heavier than clean(er) air, and air intakes must therefor be higher than street level, preferably on the roof.

#01.1.4 views

The placement of the building and the interior layout of the building should exploit the views on offer, especially those views towards and along the highway. Views of incoming and outgoing helicopters will enhance the visitors experience and are also important.
All interior spaces must have views to the outside. Where this is impossible, spaces must be well lit and have higher than usual ceilings to counteract claustrophobia (designers of shopping centers employ this technique with great success).
Hotel rooms with its small windows and lack of doors opening to the exterior of the building, can be unpleasant

Fig 118 & 119: Occupant comfort is important to visitors, especially in the heliport waiting areas.


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If we reduce the population, everyone will feel relief.

Fig.120

and claustrophobic. The design must address this issue, without sacrificing privacy for the occupants.

#0.1.1.5 Indoor / Outdoor connection

Access to outdoor space must be limited for previously stated reasons. The hotel with its envisioned atrium area will create the illusion of being outside and will enhance visitor experience.

#01.2 inclusive environments

All interior spaces accessible to the public should be wheel chair user friendly and accessible (this includes the provision of disabled toilet facilities and access to the helipads). It therefor follows that for vertical circulation lifts will be preferable to escalators.
Minor changes in floor levels must be facilitated with ramps and not stairs. The same applies for exterior circulation.

#01.3 access to facilities

The site is located next to a major regional shopping center and access to facilities are excellent. All major local banks and an array of shops and restaurants are 200 meters from the building. Access to existing public transport are also good as a taxi pick up / drop- off point are nearby (200m), and bus facilities are close by (400m). Access to the future Gautrain station on the opposite side of the highway should be facilitated by either a tunnel underneath the highway or by a pedestrian bridge. Child care facilities and schools catering for all ages are close-by (2km radius). The development will be within walking distance of numerous residential suburbs (houses) and high density developments (flats and townhouses).

On-site communication facilities must be in line with industry standards for this kind of development: (wireless Internet connection, video conferencing facilities and satellite connection.)

#01.4 participation and control

Fig 120: Signage can play a major role in the design of a building.

#01.4.1 environmental control

Ventilation, cooling and heating of the heliport building and communal spaces in the hotel building will be kept at optimal levels with by way of a central environmental management computer, but the "hot desk" office spaces and the hotel rooms must be adjustable by the occupants themselves. The hotel rooms will all be fitted with electronically adjustble blinds.

#01.4.2 social spaces

Social spaces must be created around the entrance of the building(s), and interior spaces must encourage human interaction. Waiting areas in the heliport and the hotel lobby are all areas that will encourage social interaction.

#01.5 health and safety

#01.5.1 Helipads

Various laws regulate air travel and facilities affiliated with air travel (see legislation). Access for pedestrians and vehicles to certain areas must be restricted. Fire control measures and balustrades are essential in the design of helipad's. The approach angle of helicopters (1:8) also dictates that helipads must be a certain height above ground level if higher structures exist in the immediate vicinity.


LA POSTE
DIE POST
LA POSTA
10/03
EUROCARD
12/02
EXPIRY DATE
MasterCard

Fig.121

Points to consider for helipad safety include:

- *Helipads size requirements (min 20m x 20m)*
- *Public access to helipads must strictly be controlled*
- *Automated fire fighting equipment must be designed and installed by a specialist*
- *Re-fueling of helicopters will create a unnecessary fire hazard and should not be allowed on this building*
- *Balustrades around the helipads are not allowed and safety nets should be installed*
- *A wind sock or similar device must be present on site.*
- *An air controller with a dedicated radio channel must be present on-site (or off-site in the immediate vicinity)*

#03.2.1 smoking

In line with existing and upcoming legislation no smoking inside buildings will be allowed and provision for smoking areas must be made. Outside areas (including balconies) with seating must provide for future lung cancer patients.

#03.2.1 signage

Signs and notice boards must inform the public of safety hazards and escape routes. These signs must be clearly visible and integrated in the total design. Examples of how signage can become part of the total design can be seen in recent buildings by Rem Koolhaas (Seattle library and the McCormick Tribune Campus Center).

#03.2.1 cleaning and maintenance

The safety of cleaning staff, especially those staff cleaning the exterior and high windows on the interior must be assured.

Safety hooks must be provided along all facades with glazing.

Fig 121: Construction should benefit the whole community, not just those at the top.

#02 economic issues

#02.1 local economy

The construction of the various buildings, the extra jobs created, and the eventual profits made, will all benefit the local economy directly. Indirectly, the development has the potential to create long term employment and extra economic opportunities through skills training, the improvement of infrastructure, and the improvement of Pretoria's image as a city.

#02.2 local contractors

The construction of the building(s) will be limited to large construction companies with extensive experience in large scale and high-tech buildings. To facilitate BEE and the development of the local construction industry, construction companies invited to tender, will have to take on smaller local and preferably black owned companies as limited partners.

Local contractors must be used where ever possible, especially for smaller elements of the building (i.e. specific interior elements like flooring and lighting).

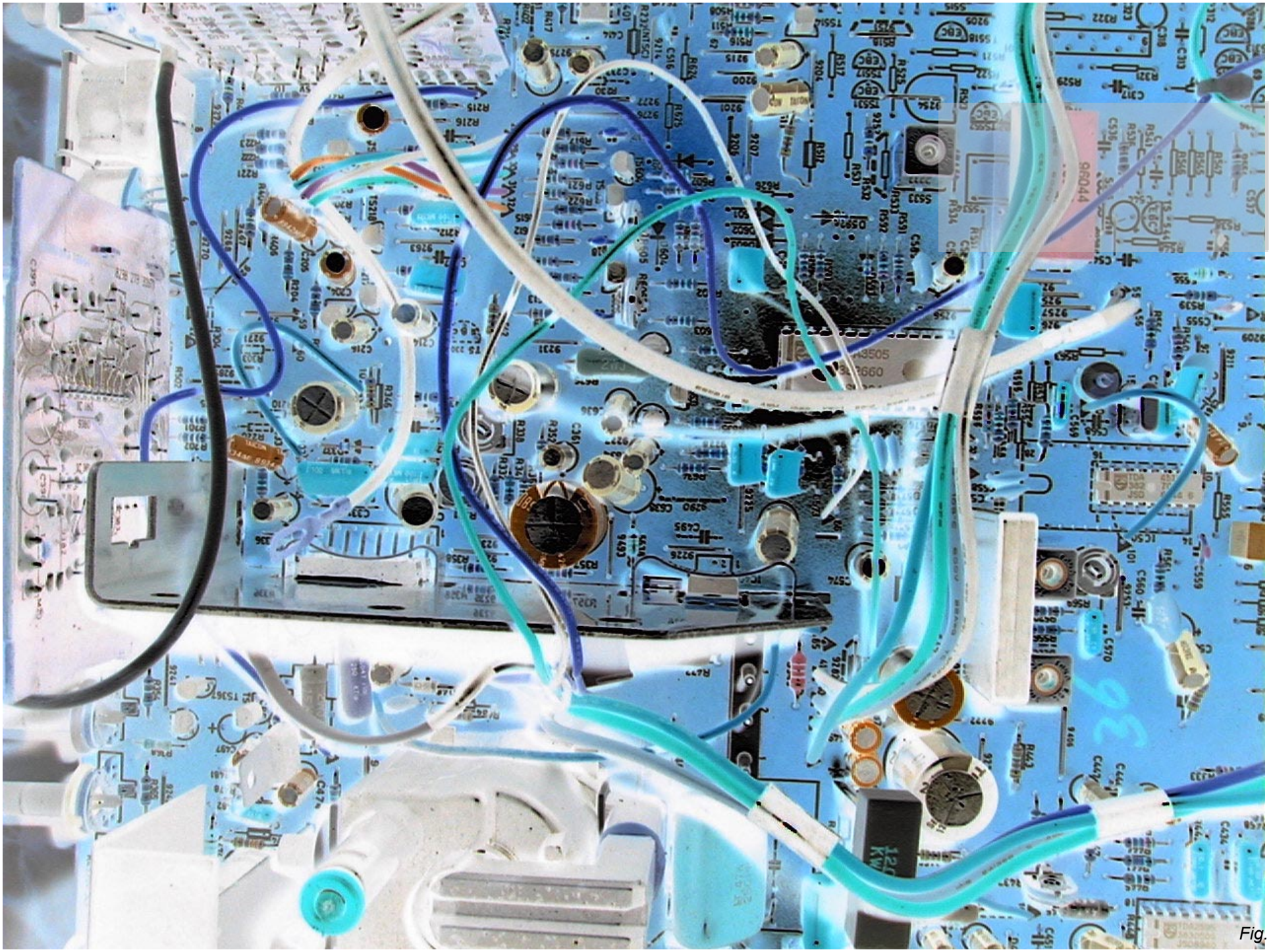

Fig.122

#02.3 local building material supply

An estimate has been set to use 80% of building construction material, manufactured and produced within 200km of the site. This includes pre-manufactured components, building systems or separate building components (e.g. wall unit, passive cooling device components). Where specified materials does not exist in the 200km radius, the set up cost of new workshops and factories locally, must be weighed against the costs of importing the materials from elsewhere.

#02.4 outsource opportunities

Small emerging businesses can be given a chance to establish a reputation, by providing an opportunity for them in the development, planning, construction and maintenance phases of the project. These provisions include the education and training of emerging businesses, outsourcing catering, cleaning services and security. The maintenance of the building and site can be through self-developed businesses, trained staff or the outsourcing to companies within 25km of the site. Outsourcing have the added bonus of not having to provide extensive staff facilities and store rooms.

#02.5 repairs and maintenance

All building systems and machinery must be serviceable by local contractors. Should this not be the case, local contractors must be trained to do so.

#02. disruption & downtime

An agreement with Menlyn Park must be secured for the use of the shopping center's back up power system during power failures. A LED light system, that requires very little power and can be run of a normal car battery, can be installed to provide light for the helipads and interiors while power are being restored. A back-up system must be available for the air controller's room.

#02.7 adaptability and flexibility

Adaptability, flexibility, and the ability to expand in the future are one of the principle requirements of this building complex.

Similar to the structures found in informal settlements around our country, the building must be able to "re-adjust", "grow" and "shrink" by re-using and adding parts or elements. The building would therefor be better served by a "kit of parts", rather than a solid whole. A lightweight structure with a thin skin can easily be adapted to future functions, where a building with heavy load bearing partitions cannot.

Technology and the speed in which technology evolves have profound influences on contemporary buildings. The building must therefor be able to respond to new technology, and the replacement of out-of-date technology.

Fig 122: To cater for future technology, the building should be highly adaptable.

Points to consider include:

- *Vertical dimensions in especially the hotel building. The floor to underside of roof or slab above should have a larger than usual dimension.*
- *Internal partitions should be non-load bearing (dry walls or light-weight wall construction)*
- *Access to services: Exposed ducting, access flooring, and removable ceiling panels allow*

Fig.123

services to be expanded and modified in quickly and easily.

#02.8 ongoing costs

To keep ongoing costs at a optimum (as low as possible) , materials and the finish of materials should be low maintenance or preferably maintenance free. The intensity of the sun in the Tshwane region have a profound influence on the long term performance of materials and more specifically the finish of materials and elements. Materials like wood and finishes like dark colored paints should be avoided. The interior fittings and materials must be hard wearing and easy to clean. Exterior cladding must be seamless or have very small joints. (To avoid the facade getting the same look as Vodaworld's facade)

#03 environmental issues

#03.1 water conservation

Where possible rainwater to be collected, stored and used later on. (For landscaping etc.)Speed and amount of runoff will be regulated by slope and surface materials. Other methods of conserving water include the use of duel flush toilets, and self cleaning windows.

#03.2 energy conservation

South Africa's Renewable Energy White Paper was approved by cabinet in November 2003. At the Renewable Energy Summit 2004, recently hosted by IQPC in Sandton, Johannesburg, Kevin Nassiep, Chief Director for Energy Planning at the Department of Minerals and Energy (DME), presented an overview of the new policy. The subsequent panel discussion highlighted some of its merits and shortcomings.

The White Paper on Renewable Energy sets a target for SA to generate 10 000 GWh of electricity from renewable resources by 2013. Nassiep clarified this as a cumulative target, which envisages a growing contribution from renewable resources over the next ten years to reach the level of 10 000 GWh. Currently renewable resources account for less than 1 % of the 200 000 GWh of electricity generated annually in SA. It is estimated that the 2013 target would equate to about 4 % of the by-then increased total electricity output. The country's main renewable energy resources are identified as wind, solar, small-scale hydro and biomass.

Fig 123: Although electricity is cheap in South Africa, renewable energy sources should be used where ever possible.

The White Paper sets out government's long-term vision: "to establish an energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation."

#03.2.1 UV penetration

The amount of daylight penetrating the building should be carefully controlled. Enough daylight should penetrate the building to avoid using artificial lighting during daylight hours, but care should be taken to filter or reflect harmful UV rays and to provide sun control to regulate the amount of sunlight penetrating the building.

Fig.124

In order to maximize winter sunlight and minimize summer sunlight, the building should be orientated along the east-west axis with large overhangs or briese-souleils to protect glazing on the northen facade. (East and west facing windows should be avoided).

To avoid the "greenhouse effect" sunlight should not be allowed to pass through skylights unhindered. Sandblasted glass panels or other screens can be used to filter sunlight.

#03.2.2 Ventilation, heating & cooling system

To take the load of the ventilation and cooling system (air conditioning system), the building must be well insulated, and the penetration of harmful UV rays must be minimized. Strategies like ventilated and/or double facades prevent heat gain on the exterior surface of the building, and reduce the load on the cooling system. The use of alternative energy sources like solar and wind energy may also be viable.

Points to consider include:

- *The highway and incoming /outgoing helicopters will generate a substantial amount of wind and wind power can be utilized.*
- *Heating and cooling can be facilitated by using a radiator system in conjunction with airconditioning.*
- *The climate of Pretoria would render a passive system like evaporative cooling useless.*
- *An indoor swimming pool can be used as a giant heat store, and as the brief calls for such a feature in the hotel, the swimming pool can be used to regulate air temperature in the hotel building.*

Fig 124: Materials used should be from recycled sources, or be recyclable at the end of the building's life.

#03.3 recycling and re-use

Raw materials and components should either already be recycled, or recyclable at the end of the building's life. The building should be made up of re-usable components rather than the traditional "wet works" material. (It is much harder to re-use a brick or concrete wall, than a metal component.)

#03.4 site

As mentioned in the context study, the site has previously been cleared for construction and, with the exception of the limited alien vegetation in the middle of the site, existing vegetation should be retained. Additional planting should be limited to indigenous plant species only.

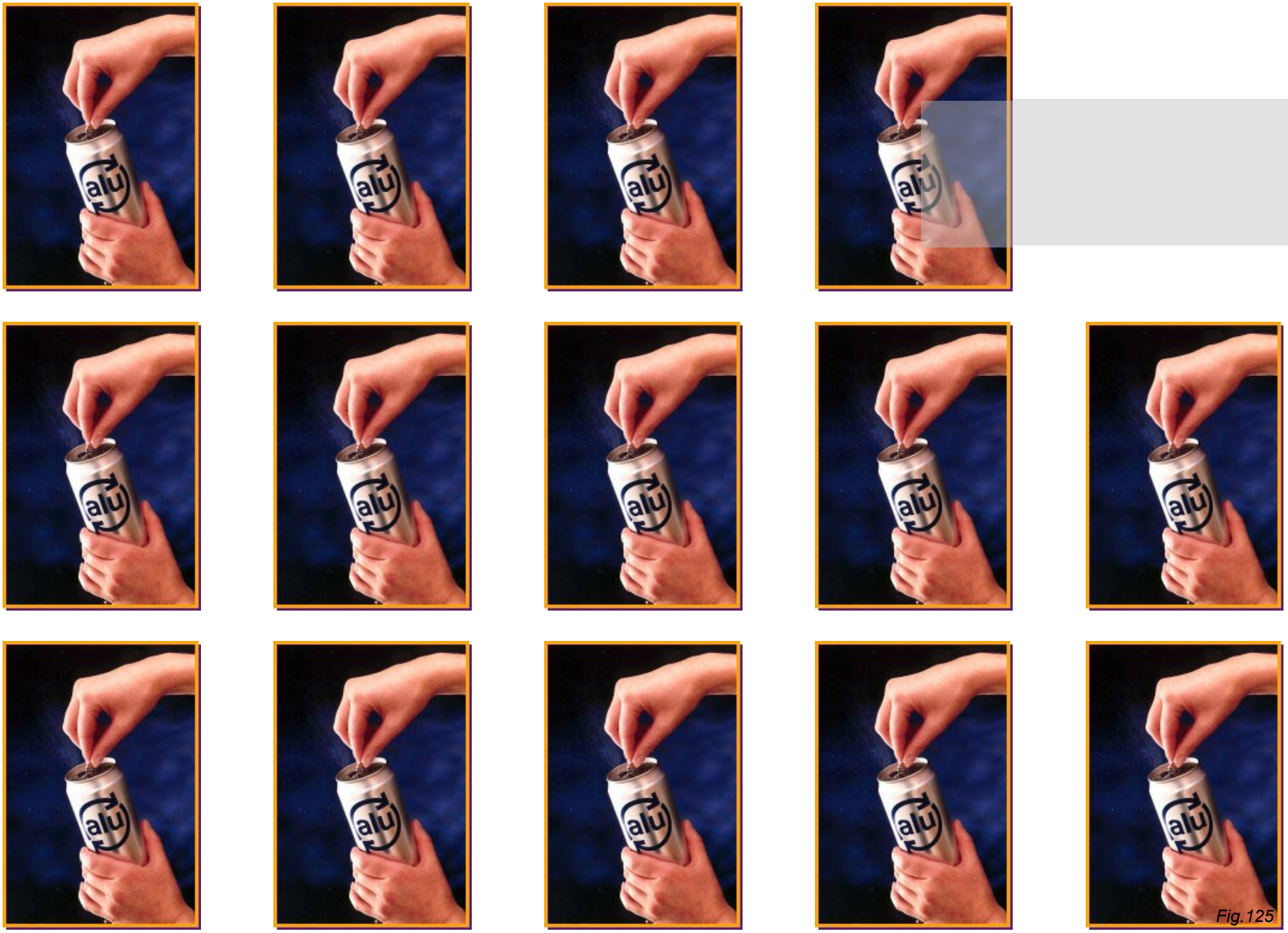

Fig.125

#03.5 materials and components

Based on the criteria already given in this document, the choice of materials and components will ultimately have a significant influence on the overall impact of the building. The ecological footprint of the building in the short and long term must be kept as small as possible.

Points to consider include:

- *Materials with high embodied energy can only be used if those materials come from recycled sources, or can be re-used or recycled with minimum effort at the end of the building's useful life.*
- *Materials must be manufactured and sourced locally. (Transport distance must be minimized).*
- *To minimize waste components must be pre-fabricated in factories, rather than on site.*
- *90% of all materials used must be recyclable or re-useable.*
- *Materials must require low or no maintenance.*
- *The little vegetation that's currently on site should be protected against humans and vehicles during the construction phase of the project. (The trees on site are not to be used as firewood by security and other personnel).*
- *Access to the site must be placed to minimize damage to the vegetation on site. (Construction access must therefore rather be from the east and NOT from the south)*

The impact and choice of materials are discussed in detail in the "Technical Inquiry."

Fig 125: Although aluminium has a high embodied energy, it is fully recyclable.

All images by author unless referenced.
Images marked with *, were based on aerial photographs obtained from Tswane municipal council.

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