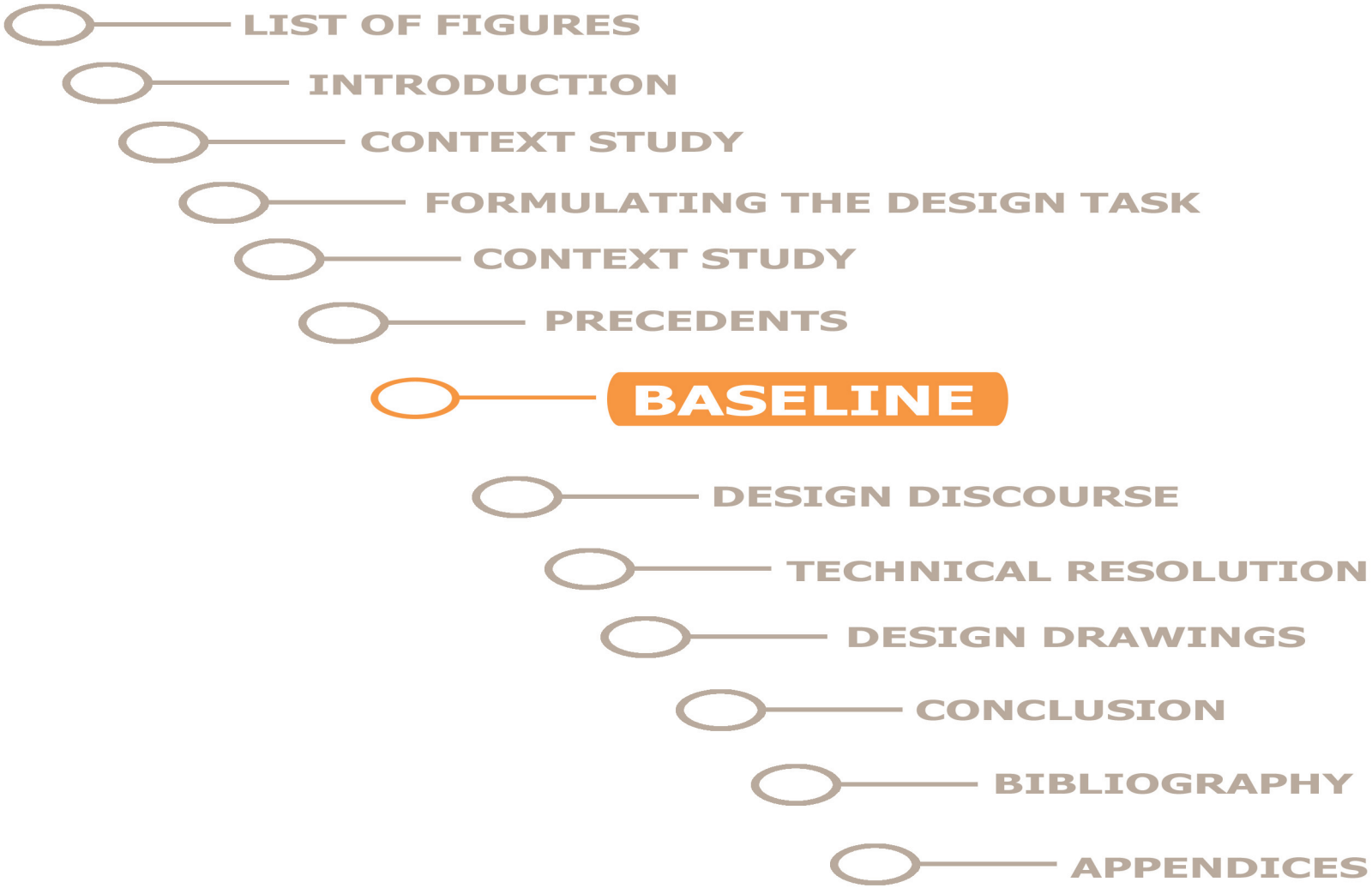
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The Gautrain development is a project with environmental and sustainability concerns. One of its primary goals is to improve the public transport system and to reduce the use of private cars. The project will generate employment opportunities and stimulate economic growth. Though the Gautrain is believed to have a positive impact in the long term, one has to accept that it will also have negative effects such as a rise in noise and vibration levels. Fortunately the positive impacts outweigh the negative ones and therefore making a sacrifice for the greater good is preferred.

For the Sandton station to be a safe, healthy and inclusive environment, designed with sufficient sustainable measures, certain baseline goals and standards, based on the Sustainable Building Assessment Tool (SBAT) developed by Jeremy Gibbert, Neufert Architects Data and the National building regulations (NBR), are set out below.

OCCUPANT COMFORT

The station should be well lit. Preference should be given to minimise the use of artificial, specifically electric lighting. However, because the station has a subterranean nature, methods to optimise the use of natural light are restricted. Nonetheless, the design should attempt to allow natural light to penetrate the structure, even if only to a limited extent. Glare, harsh shadows and high contrasts (in relation to background) produced by very bright light sources are undesirable, but moderate shadowing can aid perception of textures. Similarly, contrasts – if used to a limited extent – could be used very successfully to draw attention to elements such as edges, level differences, etc.

Thermal control and ventilation in a building are vital components in creating healthy and comfortable environments. Depending on humidity, the clothing and the level of the user's activity an average temperature of between 22°C and 24°C is usually satisfactory. Mechanical methods of ventilation, cooling and heating, though used frequently, do not provide energy efficient solutions and waste valuable resources. Passive systems should be applied to ventilate, cool and heat the station where possible and mechanical methods of ventilation should, if possible, be limited to toilets and kitchens.

The noise and vibration levels produced by trains should be addressed through the use of sound absorbing and isolation methods. In this instance it is presumable that certain structural solutions, to absorb ground born vibrations will also be incorporated. An acoustic engineer's assistance is required to resolve all matters in this regard.

ERGONOMICS & INCLUSIVE ENVIRONMENTS

The design should provide spaces wherein the special and dimensional requirements for comfort and easy use are met. Because of the extensive user profile in a station, the design should be able to adapt and provide solutions that are not restricted to a single group of users. The station is also a work space; consequently a productive and comfortable work environment should be created in addition to the required comfortable customer/user environment. Numeric data and standards for the calculation of size and dimensions of objects, spatial relationships, sightlines and view angles should be used.

Station facilities should be accessible to all users. The design should provide for easy access and use by disabled persons, the elderly and children.

The first issue to address is safety, especially in regards to level changes. Balustrades and railings should comply with SABS 0400 standards, safety glass should be installed where glazing is used. Elevators (where appropriate) and ramps of 1:12 fall should be provided at all level changes. Level differences should be indicated clearly. Edges such as stair nosings and wall and floor joins should be distinguishable through the use of high contrasts and a change of texture or finishing.

At platform level users should be protected from the train tracks to avoid accidents and suicide attempts. Platforms should have marked indicators and surface changes to signify the platform's edge.

The creation of facilities for disabled people is an important inclusive aspect. Design for the disabled covers a large and varied spectrum. Catering for the physically impaired/wheelchair users include sufficient and well designed toilets, lowered counter levels at ticketing machines, offices, information desks, ATM's, etc. Elevator controls that are reachable from a wheelchair and appropriate and safe access to all levels are further considerations. Provision for the visually impaired and blind means approving and allowing guide dogs in the station and if required, facilities like water bowls should be provided. By using Braille on elevator controls, ticketing machines and access control units, along with audio announcements will go a long way in making the station more accessible and comprehensible. Visual aids such as lighting signals, indicators and appropriate signage and information systems will assist the hearing impaired and deaf.

FACILITIES

Communication (email, telephones), retail /catering, banking and childcare are services that should be considered from a social perspective. Social spaces for social interactions, such as coffee shops and cafes should be provided. Easy access to refreshments are also important.

EDUCATION

Spaces within the station should also be used to educate commuters about relevant issues such as Aids, the environment, and safety concerns. This could be done through exhibitions and posters, images and messages printed on travel cards or even by screening short audio-visual adverts.

ECONOMIC

The design should incorporate and provide for the use of local labour, local materials and locally manufactured components. Black economic empowerment businesses should participate in all levels of the project. It is also important to create employment by training local workers to repair and maintain the building. Cleaning, security and catering services should be sourced out to small emerging businesses. Training and skills development can empower local communities through entrepreneurship development.

ADAPTABILITY AND FLEXIBILITY

Though the location and design make it very unlikely to re-use and adapt the structure for any function other than a station, care should be taken to design the commercial spaces for multiple functionality and flexibility. The lifespan of materials and commercial ventures should be taken into consideration along with recycling and re-use possibilities of materials and fittings. Installations should be easy to assemble, requiring low energy input and it should be simple to take apart and remove. By providing an adequate vertical dimension, spaces can be used more efficiently and adapted to accommodate different functions.

ONGOING COSTS

The design should specify materials that require low maintenance and low cost maintenance. Materials that are hard-wearing, durable and easy to clean should be used. All materials should comply with the safety and standard requirements set out in the building regulations. Care should be given to ensure that maintenance, inspections and replacements keep disruptions to a minimum.

ENVIRONMENT

The use of scarce resources should be avoided. Materials with low energy inputs should be preferred to those with high embodied energy. Recyclable materials should be used where possible.

Waste generated in the station should also be recycled. Dust and garbage bins can be divided into labelled sections to sort glass, paper and tin cans for this purpose.

The station should be equipped with water efficient devices and water saving components for flushing toilets and in showers. Energy efficient fittings, devices and lamps with low energy consumption such as fluorescents should be used where appropriate.

The station landscape should focus on the planting of indigenous plant species. The landscape should be easy to maintain and the use of fertilisers, insecticides and pesticides should be avoided where possible