CHAPTER 2
A TRAFFIC SOLUTION FOR THE GAUTENG AREA

2.1 GAUTRAIN.

"The Premier of Gauteng province, Mbhazima Shilowa, announced the intention of a Rapid Rail Link early in 2002, connecting Pretoria, Johannesburg, and Johannesburg International Airport (JIA) as one of 10 Spatial Development Initiatives (SDIs)-also known as Blue IQ-of the Gauteng Government". (Gauteng Department of Public Transport, September 2002: 1-1)
This project intents to attract private car users to public transport in the Gauteng area in order to lessen traffic congestion where traffic increased at a rate of 7% per annum between 1992 and 200.
.

2.1.1 OBJECTIVES AND PURPOSE

The objectives for the Gautrain project includes the following:

- Stimulating economic growth, job creation, and development.
- Lessen traffic congestion between Johannesburg and Pretoria.
- Must aid in the goals of national Government (Black empowerment, small medium enterprise (SME) promotion and business tourism.
- Government's commitment to the promotion of public transport must be illustrated.
- Improve the image of public transport to attract private car users
- Business tourism to be promoted by linking JIA with other stations.
- Improve city sustainability by shortening travel distances.
- The Gautrain must link with the Tshwane Ring Rail Project which links Soshanguve, Atteridgeville, and Mamelodi. (Appendix A)
- Stimulate the revival of the Johannesburg and Pretoria Central Business District (CBD).
- Linking the main economic nodes in Gauteng with JIA.

The Project is integrated with other public transport nodes at all the stations, thus assisting in a holistic transport plan for Gauteng. (Gauteng Department of PublicTransport, Roads and Works,Ocktober 2002, Volume 1: 2).
The purpose of Gautrain is thus to develop a public transportation system that supports the optimization of landuse and minimise traffic congestion. This will lead to a reduction in road accidents as well as pollution levels from motor vehicles.

2.1.2 THE GAUTRAIN CONCEPT.

According to Gauteng Department Of Public Transport (Gautrain Rapid Rail Link, September 2002: 1-16) a feasibility study was done in 2000 to 2001 by the Gautrain technical team appointed by Gautrans before any proposals for the Rapid Rail Link were made. Bohlweki Environmental was appointed by Gautrans to undertake numerous environmental studies in accordance to Environmental Impact Assessment (EIA).

Key authorities provided input to the EIA. The consultation was steered by the EIA's interaction with the Gauteng Department of Agriculture, Conservation, Environment and Land affairs (GDACEL). The public was informed about this project via public meetings in April 2002. Input from the public could also be given on these meetings.
A draft EIA report has been made available to the public from 21October 2002 to 21 November 2002 in libraries and the project website.
Proposals regarding the Gautrain was based on the findings of the Environmental Impact Assessment (EIA)

The proposed Gautrain Rapid Rail Link will be a state-of-the-art rail network. It will consists of two spines namely the east-west spine linking Sandton and the East Rand at Rhodesfield in Kempton Park (a commuter service) together with an airline passenger service linking Sandton and Johannesburg International Airport (JIA). Secondly a north-south spine links Johannesburg and Pretoria Central Business Districts (CBDs). This will also be a commuter service.

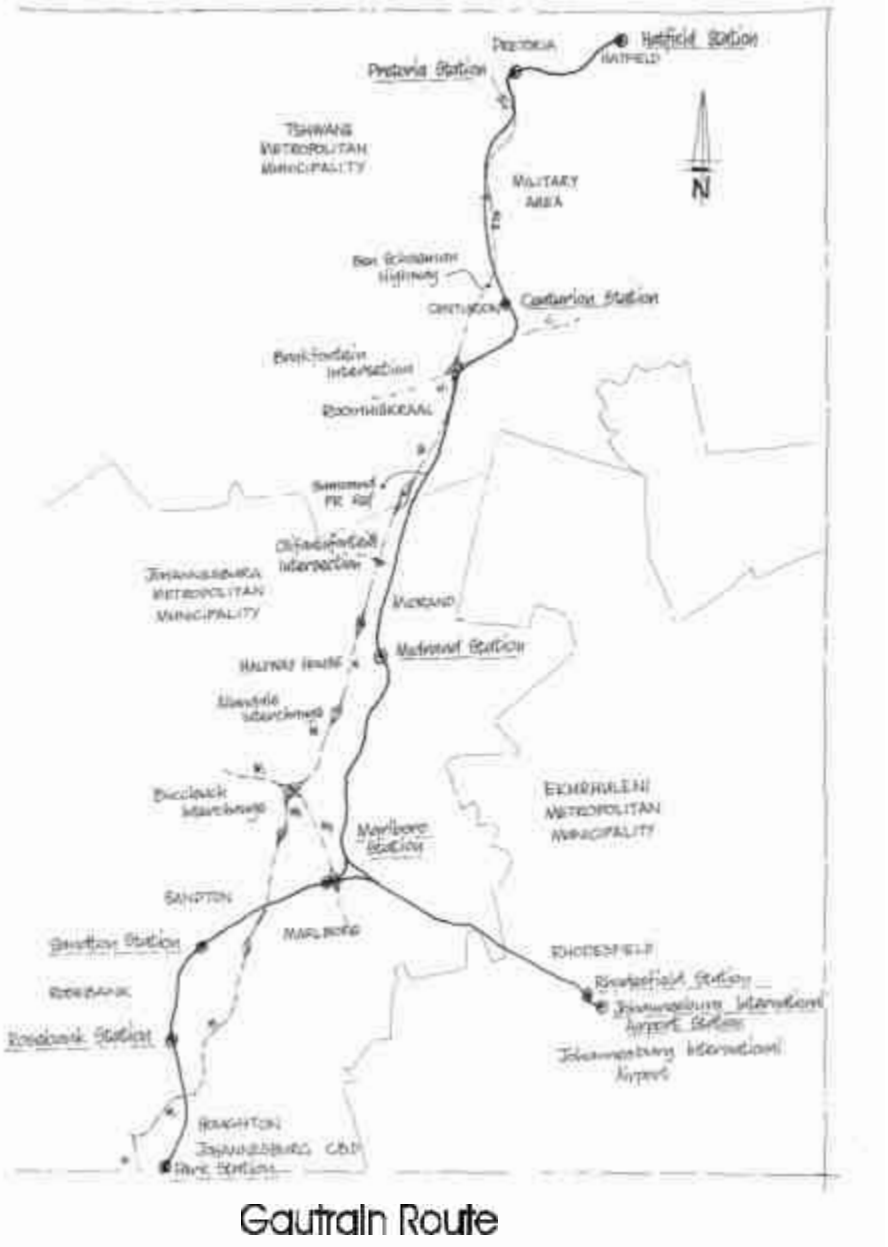

Fig 2.1 Map explaining proposed Gautrain Rapid Rail Link Route.

2.1.2.1 SERVICES

An attractive image is planned for the Gautrain as a safe, comfortable and predictable alternative to private car usage.
The length of the network planned will be approximately 80km.
The Gautrain will travel at between 160 and 180km/h.
The estimated travel time between Pretoria CBD and Johannesburg CBD will be approximately 35 minutes.
Premium services will apply for the general passenger and premium plus services to the airline passenger
(Gauteng Department of Public Transport, Volume 1 October 2002:4)

2.1.2.2 INFRASTRUCTURE.

TRAIN.

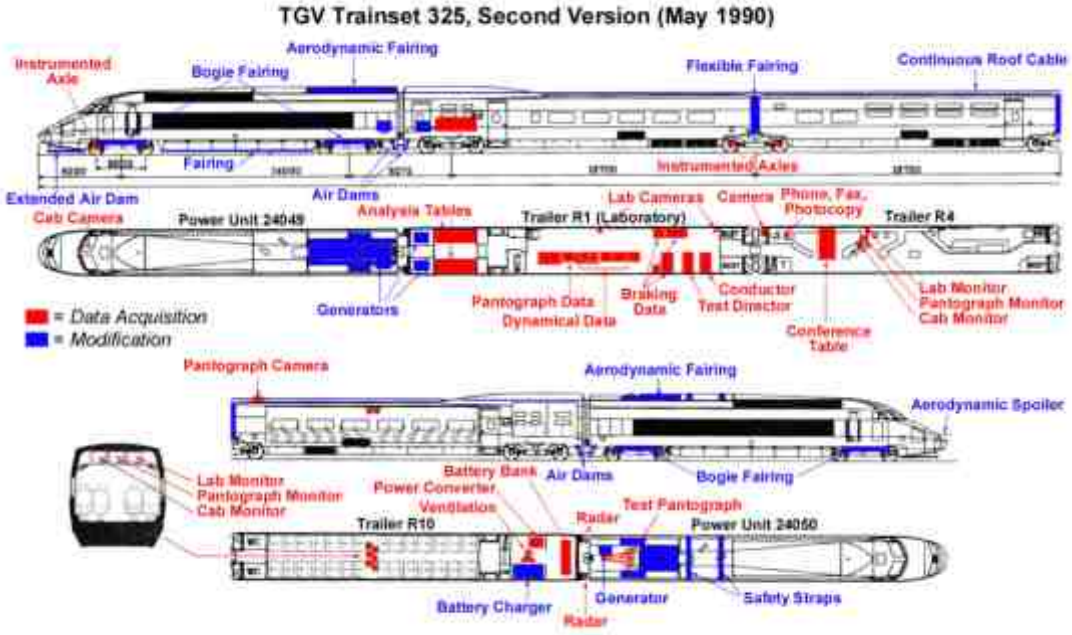

Fig 2.2 The schematic drawing of the TGV Power unit 24049, which set the speed record at 515.3km/h(TGWweb,Basics:1)

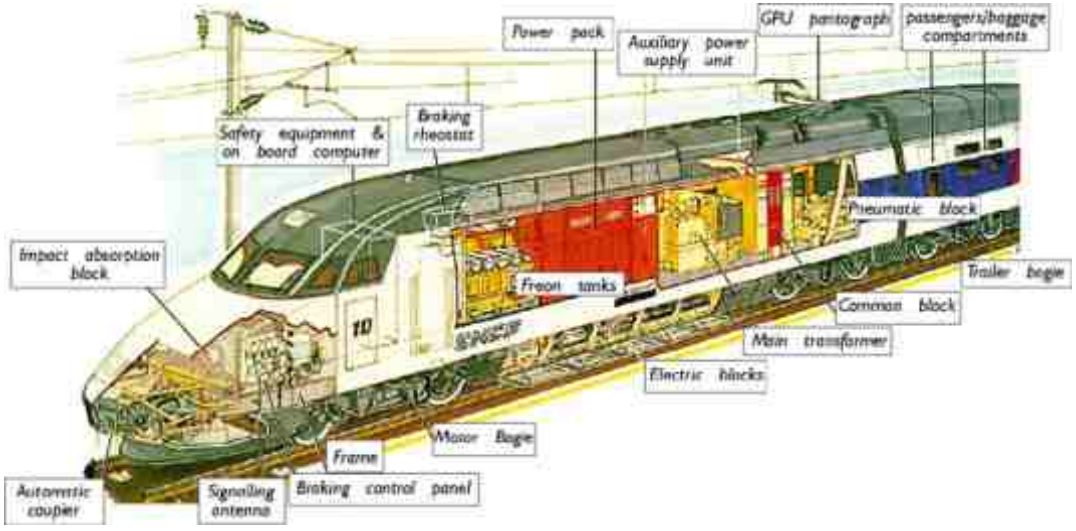

Fig 2.3. Cut-away of the TGV train Locomotive showing the radical difference from traditional diesel locomotives.(TGVweb.Basics:2)

The preliminary train set that will be used in the proposed Gautrain Project will be the TGV Atlantique, developed in France(figure 2.3).

TGV stands for “Train à Vitesse, meaning “high speed train.”
The most striking aspect of the train is the aerodynamic design of the nose, but perhaps the most innovative part is the articulation of the trainsets. The cars are semi-permanently attached to each other ,instead of just merely coupled,as seen in figure 2.4.

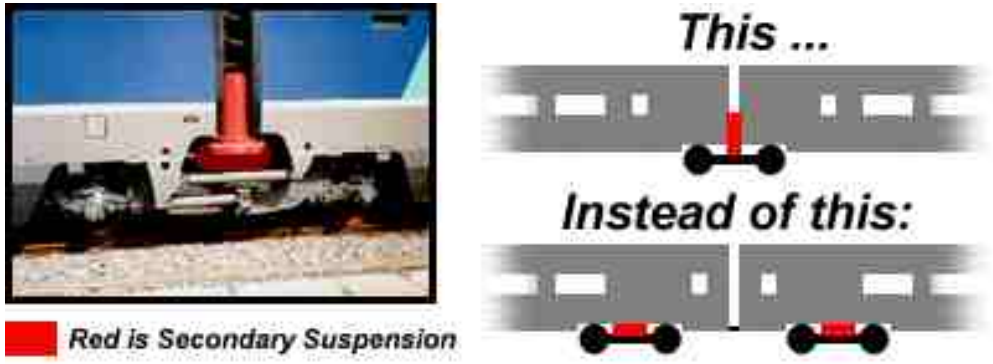

Figure 2.4. Explanation of the articulation of the trainsets in the TGV.

On the commuter services seating space for eighty passengers and standing space for twenty passengers will be provided
On the airline passenger service seating space for fifty passengers will be provided.

Twenty to twenty five train sets will be required to accommodate the expected number of passengers during the first year.

The trains will consist of three or four-car units and a drivers cab at both ends of the unit

The train will be powered by electricity supplied by Eskom while municipal electricity will be used at the stations.
Cooling fans will be used for both motor cooling and air conditioning.(Gauteng Department of Public Transport, Roads and Works, Vol1:4)

RAIL

The Gautrain gauge (distance between tracks) will differ from conventional rail systems in South Africa, which uses Cape gauge (1065mm)
The International Standard Gauge (1435mm) allows for faster speeds of up to 160km/h or more the wolrd record currently is held by the TGV train set on the left at 515.3km/h.
The proposed Gautrain stations will have a uniform length dictated by the length of the maximum predicted rolling stock envisaged on this track in the future with enough to spare at full capacity of approximately 250-300m.

The rail reserve in South Africa is a leftover from Colonial days when British Standardization dictated the width; subject to the distance an ember can travel from the stack of a steam engine
This had to be disregarded in the planning for the Gautrain, as it would pass through or near built-up areas. The adherence of this archaic rule would have meant the destruction of too many homes resulting in the viability of the project affected adversely. Thus the decision was made to make the new rail reserve 30m wide with room for two tracks (one in each direction), and a service road running parallel to the rail line

Tunnelled sections such as the planned one at Muckleneuk will consist of two tunnels approximately12.5 m apart. In accordance with international safety standards these tunnels would either be bored, using tunnel boring machines such as the ones used on the Channel Tunnel project under the English Channel, or by the more familiar method to South Africans namely drilling and blasting (as used in the mining industry) The method used will depend on the bidding consortia.

Ventilation shaft reaching to the surface, up to a maximum diameter of 18mØ, will be spaced at approximately 1km intervals o the tunnelled sections, to allow for air circulation through the tunnels and for emergency evacuations via stairwells to the surface. These would have definite impact on the development of any land parcels adjoining the tunnels, as it would have to be major design element.

Train tracks on the surface would cut beneath roads, or above them on bridges structures depending on the local topography
Deep valleys would for instance be traversed with structures

STATIONS

Anchor nodes for the Gautrain project will be developed at Pretoria CBD , Johannesburg CBD and JIA.AA
Other key nodes identified were Rhodesfield , Rosebank,Sandton, Marlboro, Midrand, Centurion and Hatfield .(Gauteng Department of Public Transport,Roads and Works,October 2002:2-7)

For the purposes of this document, there will be zoomed in on the Hatfield station as study area.

2.1.3 THE CLIENT

The client for the proposed new Gautrain Transport Station in Hatfield can be described as being a partnership of a number of role players in the Provincial Government of Gauteng Provence as well the Private Sector and the Thswane (Pretoria) City council.

The Gauteng Provincial Government.

The Gauteng Provincial Government will contribute a sum to the capital infrastructure costs.

The Private Sector.

The private sector will partially fund, design, build and operate the rail system under a concession contract with the Provincial Government.

Companies from the private sector were requested to pre-qualify for consideration to bid for the Gautrain project.
Two consortia have been short-listed and asked to submit proposals for the implementation of the project.
Their proposals will be based on or adjusted to take account of the recommendations contained in the Environment Impact Assessment (EIA) report on the project, and the content of the Record of Decision (ROD) to be issued by the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL).(Gauteng Department of Public Transport, Roads and Works October 2002Vol1:3)

2.1.4 The User

The User is defined as any person liable, in the lifetime of the built fabric (buildings and created infrastructure), to use the creation for his / her personal betterment.
This may also entail Judicial Persona (legal entities) using the built fabric for such stated purpose.

The list of users entails the following:

The shopkeepers and lessees who trade in the built area, as well as the informal traders keeping formalised stalls in the periphery.

Service personnel and staff occupied in the daily running of the buildings and related activities.

Commuters will use this building during the running time for the Gautrain (05:30 to 20:30)

Commuter A (Business Traveller)
This commuter will probably be an upper middle class business traveller that will use the building at peak time intervals.

Commuter B (Tourism Traveller)
This type of commuter is seen as the ultimate type of user to grace the seats of the Gautrain, as this user would ensure a maintained economic injection into the Gauteng Province

Local Resident (Student, Middle Class young Professionals).
The name being fairly self-explanatory, denotes the after hours user of the restaurant and entertainment sectors contained in the building complex.

The Maintenance Staff and workers.
This group of people is often the forgotten ones when it comes to the user profile of service type buildings, as they seam ubiquitous and somehow without needs. This however cannot be further from the truth, as the successful functioning of any building relies on the happiness of its working population.

External Support Servicing Personnel.
In this group the most important sector would be the Satellite Police Station and its personnel.

Others include servicing sub-contractors namely air-conditioning specialists, proprietary train systems specialists and the operators of the technical infrastructure to maintain the Running Gear of the Gautrain Rapid Rail System.

Go to:
Chapter3: Hatfield in context