

SOUTH AFRICA

Gautrain Rapid Rail Link



OVERVIEW

Location

Gauteng, South Africa

Sector

Transport – Rail

Procuring Authority

Gautrain Management Agency

Project Company

Bombela Concession Company (Pty) Ltd

Project Company Obligations

Design, Build, Finance, Operate and Maintain

Financial Close

25 January 2007

Capital Value

ZAR 24.5 billion
(USD \$3.4 Billion – 2007 exchange rate)

Contract Duration

19 years, 6 months

Key Events

Disputes, land acquisition delays, design and construction changes

SUMMARY

The case study was drafted based primarily on inputs received from the Gautrain Management Agency (GMA) (the Procuring Authority).

The Gautrain Rapid Rail Link project is an 80km rail project developed to ease traffic congestion and facilitate travel in the Johannesburg-Pretoria corridor in South Africa. It is an ambitious undertaking, being the first PPP in South Africa of this scale. The project faced a range of challenges including some difficulties in land acquisition that led to delays during construction. A number of disputes also went to arbitration, however the parties negotiated a settlement and the project is currently operating successfully. The project was delivered in two phases on 8 June 2010 and 7 June 2012.

SUMMARY LESSONS LEARNED

- Change processes need to be clearly defined, with incentives to respond in a timely manner to avoid unnecessary prolongation of change agreement and implementation.
- Engage with stakeholders and address land access issues early to avoid the risk of failure to secure land access and delays while the construction is progressing.

- Shared data and information management systems used by the Project Company and Procuring Authority must be compatible and meet each party's respective requirements.
- Periodic meetings should not be overcrowded such that they are unmanageable and ineffective.
- The timing of Environmental Impact Assessments for linear projects is critical, so as not to cause delays on the project.

PROJECT INCEPTION

Goals and Objectives of the Partnership

The goal of the project was to provide a rail-based commuter service in the Johannesburg-Tshwane corridor and provide relief to the road network, as well as providing a link between Sandton and O.R. Tambo International Airport. The 19.5-year project involves the design, construction, finance, operation and maintenance of a 77km long track, with the provision of 96 cars of rolling stock to transport passengers. In addition to the rolling stock, the Project Company is responsible for providing bus links to the train stations to facilitate access to the rail network, and with this, the responsibility for transporting people from their area of residence to the station and across the network falls to the Project Company. The Gautrain project was also considered to be part of South Africa's efforts to create jobs and improve social mobility through job creation and skills development to disadvantaged populations.

The Economic and Political Environment during Inception

Public transport is widely available in South Africa, however the quality and reliability has not always met the required standard. At the time of project development, the Passenger Rail Agency of South Africa through Metrorail (the South African operator of commuter rail services) delivered over one million trips per day during 2006 and all major cities had bus services. However, the challenge was that the coverage of the public transport system did not keep pace with urban development and quality of services suffered as a result of under-investment. The government, therefore, identified the need to ease traffic congestion within the Johannesburg-Tshwane corridor, which would allow for the provision of efficient transportation and facilitate movement of people. At the time, the upcoming 2010 FIFA World Cup added time pressure to have a reliable transport system in place in Gauteng.

There was significant concurrent activity in the construction market during the construction phase of the project, with a range of other major construction projects underway in preparation for the FIFA World Cup. Five stadia were built for the games, in addition to other transport and infrastructure developments to accommodate the mass inflow of people. This increased demand created a major shortage of skills, materials, and equipment during the time of construction of the project.

MANAGEMENT OF THE PPP CONTRACT

Construction Phase

The 80km Gautrain rail line included the construction of 15km of tunnelling and a number of viaducts, stations, depots, and parking bays. The scope of the project also included supporting facilities, in addition to the rail track and rolling stock. The project was completed in two phases, with the first delivery date of 8 June 2010 and the second delivery date of 7 June 2012. Due to the upcoming FIFA World Cup, the first phase was accelerated and delivered three days ahead of schedule.

Phase 2 of the project runs from Midrand to Pretoria and Hatfield, and from Sandton to Park (Johannesburg). Phase 2 was delayed by five months due to delays associated with land acquisition and the dispute related to water ingress in one of the tunnels between Rosebank and Park. These challenges are detailed further below under the heading "Key Events".

The Procuring Authority approached the transition from financial close to construction in a proactive way by commissioning the Project Company to undertake enabling works once the preferred bidder had been identified (prior to the start of the construction phase). This was also beneficial to the Project Company itself, as it already had a team in place when construction started.

There were many challenges in the construction of the project, including difficulties in obtaining land access. Because of the time pressure arising from the need to complete parts of the system before the FIFA World Cup, some approvals from local governments along the proposed route could not be obtained prior to financial close, and in some instances, these local governments capitalised on the urgency and pressured the Project Company to deliver additional works to improve some roads. There were other problems with engaging stakeholders, such as the requirement to relocate one of the stations to accommodate property developments along the route. While land acquisition risks were retained by the Procuring Authority, the costs of relocation of the utilities and road improvements around the stations were transferred to the Project Company.

An Environmental Impact Assessment (EIA) process was successfully concluded and the necessary environmental authorisations were obtained for the project by 2009. Obtaining the necessary environmental authorisations took longer than envisaged. This delay was caused by the EIA process having to commence at the planning stage of the project and so it was based on preliminary designs. This resulted in amended EIA applications that had to be submitted to cover changes to many sections of the alignment, proposed by the Project Company.

During the construction period, some technical issues arose, including the tunnel not meeting the specifications for maximum water ingress. This resulted in a dispute that was settled along with all other disputes in an agreed settlement in 2016, which is detailed below under the heading "Key Events".

Operations Phase

The service provided by the Project Company and the operations contractor met and exceeded targets of availability and punctuality at an average of 99.5% and 98.6% respectively for all trips scheduled for the 2016/17 financial year. Safety and security targets have also been met and exceeded, increasing customer confidence in the Gautrain and in public transport in general. The safety of passengers and of the system itself remains at excellent levels. Recently, there has also been an improvement in the general condition and cleanliness of the station buildings, resulting from the successful implementation of intensive cleaning operations by the Project Company.

The operations of the project have been broadly successful, and the 2016/17 financial year saw an overall increase of 1% in the number of passenger trips, with the number of passenger train trips reaching 15,612,070. However, the number of users from airport stations declined due to competition with app-based cab/taxi hailing services. Consequently, a freeze on airport service fares has been introduced for 2017 to keep up with the competition.

After six years of operation and close to 80 million passenger trips, the project has had a positive impact on the provincial economy, alleviated traffic congestion and rejuvenated several inner cities in Johannesburg and Tshwane. It has created jobs and helped to re-establish the rail sector in the province. Some studies on the wider benefits of the project indicate that between 2006 and 2011, over 122,000 jobs were created by the project. For every ZAR 1 spent on the project, ZAR 1.72 has been added to the Gauteng economy. With the project's 99 percent availability rate, less than 0.4 percent fare evasion and 98 percent punctuality of its trains, the system has generated strong demand for the expansion of the project¹.

Performance Monitoring and KPIs

For the construction phase, monitoring of performance was undertaken through milestone achievement. As part of the payment mechanism, this approach served as an effective indicator of performance during the construction phase. These milestones were monitored by the Procuring Authority and Project Company, as well as an independent certifier.

There were approximately 1,000 milestones on the project, covering over 25,000 individual activities, which made ongoing performance monitoring a challenge. There were

12 key milestones, which were spaced 4-5 months apart and were used as an indicator of integrated progress. They were also useful for judging how the civil works were progressing compared to the rolling stock and systems delivery. On completion, both parties would inspect the delivered works with an independent certifier who is the only party authorised to certify compliance and progress of the work and issue a payment certificate to the construction contractor for the completed works.

In the operations phase, there are 25 measurable criteria against which performance of the Project Company is monitored each month, with potential deductions to be applied in case of failure to meet the standards. The performance criteria are monitored by the Project Company and reported to the Procuring Authority on a monthly basis. The monitoring and recording system is as automated as possible and manual interventions are minimised, and the payment mechanism prescribes deductions to unavailability of service or poor performance.

One KPI is a social development criterion, which sets a range of monthly targets related to training and employment of male and female historically disadvantaged individuals and has related non-compliance payment deductions. This reflects the government's objective to create jobs and improve social mobility of disadvantaged populations.

Payment Mechanisms

The Procuring Authority provided financing in the form of a USD \$3 billion grant, while the Project Company raised USD \$360 million in debt, and USD \$70 million in equity.

It was understood from the outset that the required capital for the project was far greater than what the private sector could invest and recover from user fees. As a result, government support was the main source of funding and it came in two forms. The first is a provincial contribution to fund the construction phase, which is the bulk of the government support, amounting to approximately USD \$3 billion. The second financing contribution from the government came in the form of "a patronage guarantee" and is being provided during the operations phase.

During construction, where the first form of government contribution was provided, milestone payments were made to the Project Company, with an independent certifier commissioned by both the Procuring Authority and Project Company to monitor compliance and issue payment certificates for each payable milestone reached. This traditional milestone payment system was proven adequate for such a large project, with multiple heavy works undertaken at the same time.

For the operations phase, when revenues are above a certain threshold, profits are shared between the Project Company and the Procuring Authority, on the basis of the achievement

¹ <http://gma.gautrain.co.za/article/expansion-of-gautrain-rail-network>

of certain rates of return on equity by the Project Company. There is also a lower threshold, which is covered by a minimum revenue "patronage guarantee". Demand risk is therefore taken by the Project Company up to a certain level, below which the patronage guarantee is given. User fees and ancillary revenues are the main source of income for the Project Company. There is an incentive payment scheme for the Project Company for revenue growth during the initial five years of the operations period.

As for performance deductions, since the majority of the KPIs cover operational excellence and performance, any abatements resulting from failure to meet operational KPIs are generally borne by the operations contractor and deducted from its fee. So, the risk of poor performance is transferred from the Project Company to the operations contractor. The Project Company is, however, exposed to a reduction in the patronage guarantee payable by the Procuring Authority in instances where train or bus availability falls below set thresholds.

To calculate the patronage guarantee, the minimum required total revenue (MRTR) financial metric is used, which was part of the Project Company's bid submission. This metric is used to make two calculations to determine the amount of the patronage guarantee. The lesser amount of the difference between the MRTR and the actual revenue, and the difference between the MRTR and the revenue forecast is considered to be the patronage guarantee amount. As a result, the Project Company carries the risk of its revenue being below its forecast. Earning revenue above its forecast and below the MRTR reduces the guarantee payment from the Procuring Authority. Therefore, the Project Company is not incentivised to achieve revenue higher than its forecast once the initial five-year incentive scheme ended.

Change Management

The change management process in the PPP contract for scope changes proposed by the Procuring Authority was broadly structured as follows:

- The Procuring Authority would issue a change notice;
- The Project Company would respond with an outline cost within an agreed timeframe;
- The Procuring Authority would then make a decision to allow the Project Company to proceed with a fully developed response based on the initial outline cost; and
- If the Procuring Authority allowed the Project Company to proceed, the Project Company would submit a fully developed response.

However, there is no time limit on when the final response from the Project Company should be submitted. This proved to be a major flaw, as there was no time limit for the Project

Company to respond with a fully developed solution. Each change had to be negotiated from first principles (with no base rates agreed prior to financial close), which added to the time required to complete the process.

In addition, there was a provision for the Project Company to refuse a change if the number of changes issued was over 15 during the construction period. As it happened, the Project Company did not enforce this right, as it became clear that more changes were needed for the project to proceed. In total, the variations implemented amounted to less than 5% of the initial capital cost.

ROLE OF GOVERNMENT

This project was the first PPP of its kind in South Africa, thus requiring a certain level of adaptation by the government. The government of South Africa formed a PPP unit to promote PPPs and provide advice to Procuring Authorities on contract management and team set-up. The Ministry of Finance and Treasury provided advice and support to the Procuring Authority on this project. Initially, the Procuring Authority was the Department of Roads and Transport of the Gauteng province government. Subsequently, Gautrain Management Agency was formed following the approval of the relevant legislation by the Provincial Executive Council in December 2006. The Procuring Authority (Gautrain Management Agency) provides the necessary capacity to fulfil the province's contractual obligations and manage its relationship with the Project Company and all other stakeholders. The objectives of the Procuring Authority are defined by the Gautrain Management Agency Act. Overall, its objective is to manage, co-ordinate and oversee the project in the interest of the government as a whole and the province in particular. The Procuring Authority's responsibilities include matters such as managing the relationship between the province and the Project Company in terms of the PPP contract, managing assets and finances, liaising with all relevant government institutions and interested parties promoting the project, promoting Broad Based Black Economic Empowerment, and integrating the project with other transport services.

RELATIONSHIP BETWEEN THE PROCURING AUTHORITY AND PROJECT COMPANY

Team Set-Up and Staffing

The approach from the Procuring Authority in terms of giving the Project Company a head start on enabling works outside the PPP contract ensured a smooth transition from financial close to construction. Both the Procuring Authority's team and the Project Company's team were strengthened after financial close with new staff being brought in to manage the project. The Procuring Authority's team was staffed with local experts and had extensive experience covering

design, major programmes management and contract management. Contract management training was also provided to new staff after financial close.

Communications

The interviews conducted suggested that communication between the parties has been challenging to manage. Periodic meetings were the principal form of interaction between the parties, and while there were monthly meetings held for the project, these included up to 30 participants, which at times made it difficult to ensure sufficient focus due to the varied interests of the parties involved.

Weekly meetings were also held between the Procuring Authority and the Project Company's representatives to discuss key issues, and these were more productive as they involved no more than eight people at a time. The meetings with the independent certifier were seen as beneficial, as they allowed for an objective discussion on the certifier's findings and eventually evolved to being used to monitor the project's milestones.

Informal strategic-level meetings were held on a quarterly basis, with the aim of allowing the parties to socialise and build stronger relationships. This was stopped two years after financial close.

In the operations period, formal contractual meetings as well as informal coordination meetings are held on a weekly, monthly and quarterly basis.

Information Management

A data and document management system was stipulated in the contract. The Procuring Authority selected a particular software system for all document and information management. However, the Project Company found that this was not suitable for its record keeping and internal management control, which resulted in the Project Company and its related parties using their own software for document and information management. The consequence was that the Project Company had to then convert their document and information management system to be compatible with the Procuring Authority's in order to use it.

KEY EVENTS

Disputes

There were multiple disputes on the project, starting in 2008 when it became clear that the Procuring Authority would not be able to provide the land access as planned. The Project Company believed that it was entitled to relief in case of delays, however it was not until the delays on the critical path reached nine months that the construction contractor accelerated the works and claimed for compensation. There

is a Dispute Resolution Board, but it was set up to deal with issues related to scope and specifications only. Any other issues can be quickly escalated to arbitration without going through the Dispute Resolution Board. In the case of this dispute, the matter went to arbitration as an amicable agreement could not be reached.

Another claim in the project was started by the Procuring Authority after it found that water was leaking into the tunnels, in excess of the maximum ingress permitted. The disagreement was escalated to arbitration. The Procuring Authority won the arbitration award for the water ingress in the tunnel and the Project Company was ordered to carry out remedial works.

In addition, a number of separate disputes had gone to arbitration, and on 18 November 2016, the Procuring Authority and the Project Company agreed to a comprehensive settlement of all disputes relating to the construction period of the project. The mutually agreed settlement brought to an end the protracted, costly and multiple legal and arbitration processes between the Procuring Authority and the Project Company.

The settlement resulted in: 1) the Procuring Authority paying the Project Company an amount of ZAR 980 million in full and final settlement; and 2) the Procuring Authority agreeing to forgo receipts of the railway usage fee in the amount of ZAR 266 million that would otherwise be payable by the Project Company.

Delays Related to the Environmental Impact Assessment

The initial EIA process began during the planning phase of the project from 2001 to 2003. As a result of various route re-alignments and design changes proposed by the Project Company, the EIA process had to be updated during the construction phase and was completed in 2009.

The protracted EIA process spanned eight years and had two major implications: the costs associated with the EIA process were much higher than originally anticipated and EIA consultants appointed by the Project Company left the project during the lengthy process, which led to a lack of knowledge continuity.

The timing of the EIA process posed a challenge, as detailed above under the sub-heading "Construction Phase". The EIA regulation at the time did not provide for a seamless transfer of environmental compliance responsibility from the initial applicant (i.e. the Gauteng Department of Public Transport, Roads and Works) to the Project Company. This contributed to disputes between the Project Company and the Procuring Authority.

As a result of the requirement for the implementation of the EIA process by the Procuring Authority before the contract award and final design development, much of

the process had to be redone by the Project Company to address changes to the route alignment and final design development completed. The risk for the detailed EIA is commonly transferred to the Project Company at the contract award.

There have been disagreements between the Procuring Authority and Project Company related to the responsibility for compliance with the conditions attached to the authorisation to proceed with the project, as part of the EIA process. This resulted in a dispute that was resolved in arbitration.

There have also been disputes between the Gauteng Department of Public Transport, Roads and Works (as the project proponent and applicant for EIA authorisations) and some public participants in relation to the route alignment of the project, following the comprehensive public consultation process. Most of the disputes were solved by the Gauteng Department of Public Transport, Roads and Works accepting and implementing the proposals made by residents for alternative route alignments, but some disputes led to litigation which resulted in a decision in favour of the Procuring Authority.

LESSONS LEARNED

Change processes need to be clearly defined, with incentives to respond in a timely manner to avoid unnecessary prolongation of change agreement and implementation.

The process for managing scope change on the project was slow, which led to delays and increased risk for all involved. Furthermore, the change process did not distinguish between major and minor variations. As there were no base rates agreed contractually for standard costing of small changes, they were all being negotiated and agreed separately. Every change, therefore, had to be negotiated from first principles, which added to the time required to complete the process. Furthermore, the change process did not specify a time limit for the Project Company to respond with a fully developed solution for a change requested. Change processes need to be clearly defined, with contractual mechanisms to require responses in a timely manner. Not having response deadlines can lead to unnecessary prolongation of change agreement and implementation.

Engage with stakeholders and address land access issues early to avoid the risk of failure to secure land access and delays while the construction is progressing.

Challenges faced in Gautrain's land acquisition highlight potential complexities and consequent delays due to land acquisition. The work required in obtaining land access should not be underestimated, as any failure to secure land on time can either halt the project or lead to significant

change. Challenges are not only due to non-supportive landowners; relevant stakeholders will also often have concerns over other issues, such as environmental impact.

Although work on land acquisition and access started before construction, this work could not be completed because of pressure to implement the project to meet the FIFA World Cup deadline. Delay on land acquisition gave local stakeholders leverage over the Procuring Authority and the Project Company, which, in this case, was evidenced through the pressure exerted by local stakeholders and landowners on the Project Company to build and refurbish some existing assets, e.g. roads near stations. Early land acquisition would reduce pressure on the construction programme and give more room for risk mitigation.

Shared data and information management systems used by the Project Company and Procuring Authority must be compatible and meet each party's respective requirements.

A data and document management system was stipulated in the contract. However, the Procuring Authority and the Project Company used their own software for document and information management. The consequence was that the Project Company had to then convert their document and information management system to be compatible with that of the Procuring Authority.

The type of data sharing and monitoring systems should be carefully selected. Unsuccessful planning on data sharing and monitoring platforms can lead to additional costs for both parties, and it is clearly inefficient for either party to keep converting data from one system to the other. A compatible platform should be developed as early as possible, and if that is unachievable, then compatibility issues need to be addressed before information and documents start to pile up.

Periodic meetings should not be overcrowded such that they are unmanageable and ineffective.

Periodic meetings were the principal form of interaction between the parties. Weekly meetings were also held between the Procuring Authority and the Project Company's representatives to discuss key issues, and these were productive as they involved no more than eight people at a time.

In addition, there were monthly meetings held for the project, which included up to 30 participants, making it difficult to ensure focus.

Each of the parties represented at the meeting during the construction phase had their own interests in the project and attending to each of their issues and managing the interfaces was time-consuming. It is, however, the responsibility of the Project Company to manage the interests of its subcontractors.

The timing of Environmental Impact Assessments for linear projects is critical, so as not to cause delays on the project.

The timing of the EIA posed a challenge for the project, as it was implemented at the planning stage of the project based on a preliminary design. Consequently, a large part of the EIA process had to be redone once the route alignments and detailed designs had been completed by the Project Company.