THE PUBLIC-PRIVATE PARTNERSHIP FOR PROVISION AND EXPLOITATION OF THE HSL: ORGANISATIONAL MODEL, INFRASTRUCTURE PROVIDER AND TRANSPORT EXPLOITATION

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Introduction

In view of the proposed Gautrain Project, the High Speed Line South Project (HSL-South), currently underway in The Netherlands, offers a tremendous opportunity to learn from the experience of others in the execution of complex rail transport projects. This article seeks to draw out a number of key elements, lessons and pointers for future PPP transactions of this kind.

In the 2001 Annual Report of the DHV Group, Mr Nazir Alli, director of the South African National Roads Agency Ltd., is quoted to have said that the success of PPP projects in South Africa can be ascribed to flexibility. Since the HSL-South was started some ten years ago, the approach of the Dutch Government in the execution of this impressive project was characterised by flexibility.

When the HSL-South becomes operational in 2006, The Netherlands will truly be connected to the high-speed rail network in Europe. Intended to reduce the current travel time from Amsterdam to Paris from 5 hours and 15 minutes to 3 hours and 3 minutes, the HSL-South grasped the imagination as one of the most innovative rail transportation projects in the history of The Netherlands. The HSL-South consists of a new rail tract from Schiphol Airport to the Dutch /Belgium boarder, including all related command, control, communication and safety systems required to operate trains at speeds in excess of 300 km/h. The 80 km track has a net present value of € 4,8 billion and is intended to carry approximately 15 million passengers per year over a period of 25 years.

The Dutch Minister President is quoted saying the following: “We are committed to developing this vital new rail link, which will ensure that The Netherlands are fully part of the European high speed rail network as it progresses in the next decade. *We welcome the involvement of the private sector in this project and look to it to provide an innovative approach to the provision of the new line*.” The State undoubtedly had high expectations of the private sector. The pre-qualification document, for example, contained the bold statement that the “private sector will extract maximum efficiency through harnessing the benefits of best private sector disciplines and innovation.” One benefit of the political weight attached to the HSL South Project was that there was significant political will to carry out the transaction and to take difficult decisions related to it.

On 15 January 1999, the cabinet announced the privatisation model for this first high-speed line in The Netherlands. The model consists of three parts: civils (substructure), rail systems (superstructure) and transportation. The model wascreated by also including the visions of the open market in The Netherlands. Although the concept of Public–Private Partnerships (PPP) was already well known abroad and in other industrial sectors, this

was the first time in The Netherlands that the industry was involved in main infrastructure development to such a large extent.

Seen from the viewpoint of the consumer, the provision and exploitation of the HSL through a PPP has the objective to provide an optimal transportation system: competitive ticket prices, on-time departure and arrival of trains and exceptionally comfortable and save travelling. A travelling time from Amsterdam to Rotterdam of 30 minutes will, after all, be a very interesting new product to many travellers (current travelling time is 55 minutes). Once the high-speed link through Belgium is completed, the travel time form Amsterdam to Paris will be 3 hours and 3 minutes.

Figure 1: Layout of the HSL South

Organisational Model of the HSL-South

A key element of the privatisation model is the introduction of the *Infraprovider*. The *Infraprovider* is responsible for the design, construction, financing and maintenance of the rail infrastructure, in return for payment by the State for availability of the rail to operate trains. The other key element is the establishment of a *Train Operating Company (TOC)* for the exploitation of the rail system provided by the *Infraprovider*.

Once in operation, a transportation system like the HSL-South consists of a number of sub-systems. Successful implementation depends on the mutual relationship between the sub-systems. All players need to realise their responsibility within the system for optimal performance. Optimal performance in this case means that the HSL-South will deliver what it was set out to do when the decision was taken to continue with the project namely to:

- Substitute automotive - and flight traffic with rail traffic
- Strengthen the economic position of The Netherlands within the EU.

Establishment of the Organisational Model
When the go-ahead decision was debated by cabinet, one of the points of departure was that the HSL-South should not be mere cash burden on the state coffer. This meant that the cost of the investment should at least be partly recovered. This lead to the decision that the project should be funded partly publicly and partly privately. How this should be done was however not clear. True to the Dutch culture, the cabinet chose to implement the well-known *polder model* of intensive consultation with the relevant private sector parties to determine which portions of the project would be ideal for private initiative and which portions should remain typically public responsibility.

A consultation document was published by the Minister of Transport in which the industry, nationally and internationally, was invited to indicate what they would find an appropriate model for the procurement of the provision and exploitation of the HSL-South. From the response (some 130 in number) it became clear what the private sector considered responsibilities they were prepared to accept and what they considered responsibilities that should remain with the state. The following important conclusions were made from the consultation:

- There was definitely a market for the HSL-South and the international infrastructure/transport industry stood ready to participate
- Do not put all elements of the transportation system into one mega-project; transport should be separated from construction and development of railway stations
- There was much support for splitting the construction component into a number of contracts.
- There was a unanimous plea that the State should continue to assume certain risks that could best be managed by her
- The procurement of a transport concession would draw much interest
- Integration of the infrastructure with existing Dutch transportation systems was considered key to successful implementation of the HSL-South
- The manner in which the Dutch government opened the process for consultation was received with much enthusiasm by the European establishment.

The development of an organisational model for the implementation of the HSL-South was based on the information gathered from this consultation.

What does the HSL-South Organisational Model consist of?
This can best be described by the scheme illustrated below; the squares indicate the names of organisations and the numbers indicate the flow of money between the different entities.

Stream 1: The first money stream refers to the primary task of any TOC: transport of passengers in return of payment. To be able to perform his function, the TOC needs to buy and maintain rolling stock, employ personnel and buy track, power, etc. This is all paid with revenue from ticket sales.

Streams 2 and 3: These money streams refer to the payments the TOC needs to make in order to use the infrastructure provided to it. It pays the owner of the railway stations for the use of the facilities and the State for the use of the track to run its trains on.

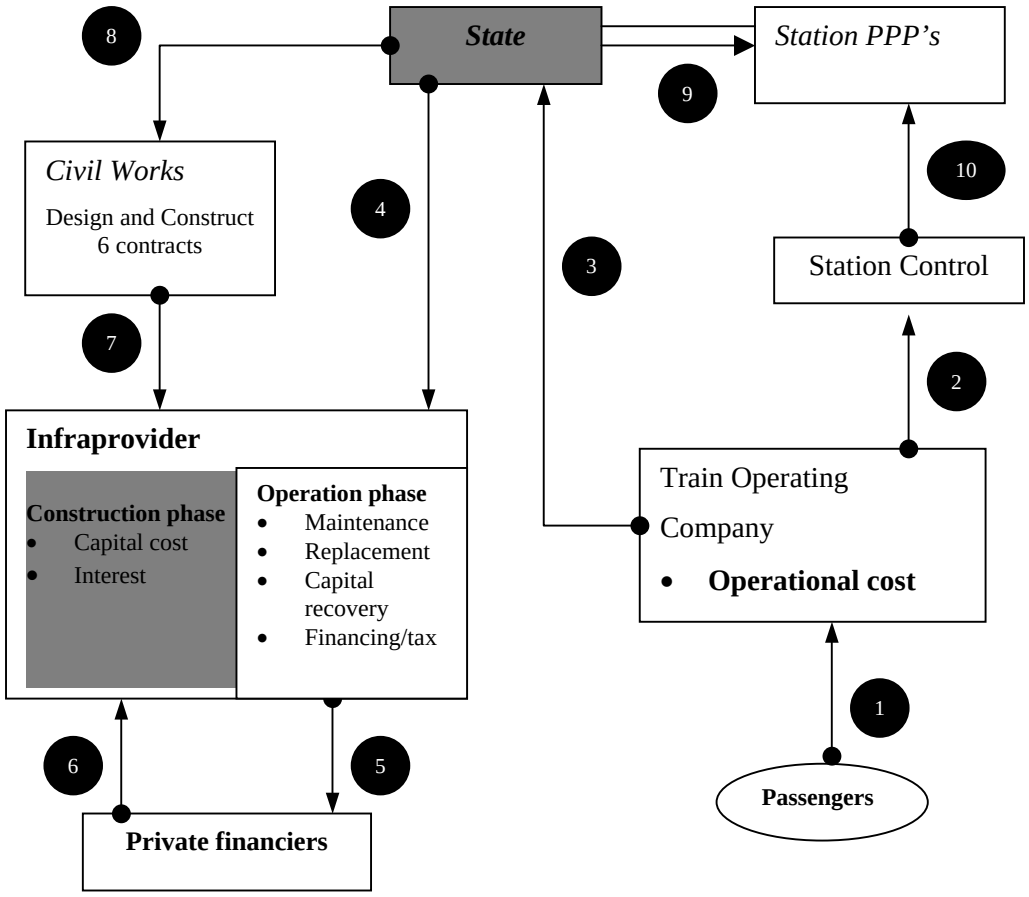


Figure 2: Money stream on the HSL South Project

Streams 4, 5, 6, 7, and 8: These money streams all refer to availability of the new infrastructure to be provided. The role the so-called *Infraprovider* has to play in this regard has already been described. The *Infraprovider* receives from the State a track base, financed from the State budget (streams 7 and 8) and provides upon this track base a track system which it finances through streams 5 and 6. The track system consists of tracks, traction power and command and control systems and is known as the HSL Assets. The State pays the *Infraprovider* for making available the assets to the TOC to run its trains (stream 4). It is important to note that no commercial link exists between the *Infraprovider* and the TOC. Through this arrangement the State does not need to finance the assets nor the maintenance thereof. Because the *Infraprovider* is also the responsible for the maintenance of the assets, the cost of maintenance therefor stands in direct relation to the availability thereof.

Streams 9 and 10: These money streams refer to the PPP relationship between the State and Station owners and does not form part of the remainder of this discussion.

As for any PPP, this calls for a clear division of responsibilities and risks between State and private sector, but also the mutual allocation of responsibilities between private sector companies. This is covered by clear contractual agreements.

Through this organisational model the State comes into a PPP relationship for each of the three elements of the HSL-South transportation system (Civil infrastructure, rail system and transportation). The added value of a PPP is, after all, by letting parties do what they do best.

Substructure Provided through Innovative D&B Contracts

The provision of the infrastructure was divided into substructure and superstructure. The substructure consists of all civil works, including earthworks, bridges, tunnels and track base, in other words everything required to support the rail system. The superstructure consists of tracks, traction power, command, control and communication systems, in other words everything required for the running of trains. The distinction between sub- and superstructure is best illustrated by the following typical situation.

Figure 3: Distinction between project elements

A number of factors influenced the decision to procure the civil works separately.

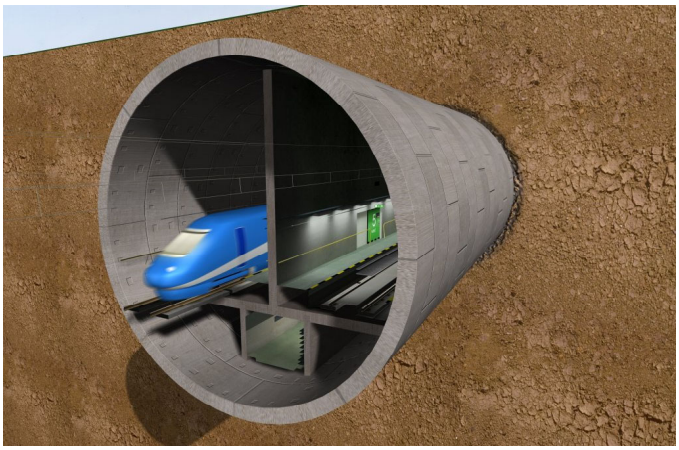
The letting of a single contract for the entirety of the civils, together with the infrastructure works, would have given rise to a contract of enormous capital value. The design and construction of the civils was on the critical path if The Netherlands' treaty obligations to Belgium were to be met.

The extent of the interface risk between infrastructure provision and the carrying out of civil works was significantly increased by this decision. The State recognised the difficulty for the *Infraprovider* to assume such risk and so agreed that it would act as a "go-between" to facilitate the interface with the civils contractors.

The essence of a D & B contract is that the contractor is free to decide on the technical content of solutions offered. The client on the other hand has a "hands-off" monitoring involvement in the contract. The contractor bases his design on a set of requirements and the clients' responsibility is limited to confidence that the requirements are being met. This is in essence a totally new concept within the Dutch building industry, an industry used to hard technical control of the contractors' activities.

The civils was divided into 7 D&B-type contracts, each consisting of a separate portion of the substructure. On behalf of the State, these contracts are being managed by so-called Project Bureau's. These Project Bureau's are staffed with technically qualified people from the Dutch building industry, i.e. consulting engineers and architects.

Included in the civils contracts are an number of innovative and impressive structures, including the Green Heart Tunnel through the nature conservation area east of The Hague and the 1,8 km long Hollandsche Diep Bridge over the Maas River near Rotterdam.



Green Heart Tunnel
- Single tube
- 15 m in diameter
- 7 km long

Figure 4: Cross-section of Green Heart Tunnel

The HSL-South *Infraprovider*: supplier of availability

The traditional DBOFT type contract brings the responsibilities of design, construction, operation and financing under one umbrella, usually as a PPP. The contracting of the *Infraprovider* on the HSL-South adds a new dimension to this form of contract. No longer is a clear definable product required (designed, constructed, operated and financed by one contractor), but is long term performance the central theme of the contract (the availability of the infrastructure for running trains).

Own money, own risk

The State's objective with procurement on the HSL-South project was to outsource the superstructure that is sensitive to maintenance to a consortium of companies, who will with own money and at own risk, design, construct, maintain and periodically renew the superstructure. The superstructure so provided includes the track, track power, command and control system, safety system and communication.

Figure 5: Hollandche Diep Bridge

The substructure on which the superstructure is to be provided is regarded as maintenance free and the State is therefore prepared to provide it at own cost and own risk. The *Infraprovider* is required to make available the superstructure for unhindered running of trains for a minimum period per day. Besides this, the superstructure must conform to a pre-stated set of requirements with regard to reliability and safety. The *Infraprovider* is responsible and liable for all activities that he undertakes in this regard.

Incentives
The compensation the *Infraprovider* gets for the service rendered is based on the delivery of an available railway track. The incentive for the *Infraprovider* is therefore to design and construct the superstructure in such a manner as to maximise availability, taking into account initial cost and the cost of maintenance. The norm for availability was set at 99%. At lower availability the State applies a penalty. The penalty regime is highly progressive. At 94% availability only 20% of the remuneration is paid out.

The risks that would reside with the State if the superstructure was provided through traditional methods of procurement, was largely transferred to the *Infraprovider*. These risks include late availability, cost increase, technical problems, premature renewal and unforeseen maintenance. The risks of the effect of changes in law and policy remain with the State. One of the most distinguishing features of the *Infraprovider* Contract was that the State would assume the risk of unforeseen low use of the high-speed rail by the public.

By involving the private sector in providing the superstructure in such a way, the risks reside with parties that can best manage and influence them. At the same time the judgement of delivered performance instead of delivered technique stimulates the market to design a durable system that will deliver the highest possible availability at an acceptable price. This optimises the available knowledge at both the State and industry.

Relationship between the Infraprovider and the Train Operating Company (TOC)
The sole objective of the TOC is to run as many trains as possible. The need of the TOC to for maximum availability and reliability of the rail puts him in close contact with the *Infraprovider*, for instance agreeing on the most suitable time for closing the rail for maintenance. Contact between these two parties will also include determining the cause of delay. As the performance of the *Infraprovider* is inter alia measured in travel times of the trains, he carefully views preventative delays. Delays due to non-availability leads to reduced income from the State.

Interfaces
The interfaces between the *Infraprovider* and the environment ranges from the existing national rail infrastructure to the new substructure on which the superstructure is to be provided. Examples of these interfaces are connection to existing tracks, supply of traction power, design approval by local authorities and the physical environment through which the HSL is being constructed.

Set of Requirements
The contract with the *Infraprovider* is in essence a performance contract. A set of performance requirements therefore forms the basis of the contract. These requirements are as far as possible functional in nature, clearly defining the service required from the *Infraprovider*. The requirements are as far as possible not physical, i.e. dimensions, strengths, etc, leaving as much freedom for innovation with the *Infraprovider*. The requirements are therefore limited to “what” is required and does not cover “how” it should be reached.

Reference design
A reference design was made in the preliminary stages of the project in order to determine the feasibility of the HSL-South. This reference design was made available to prospective tenderers to assist with the formulation of their pricing structure. It was made on a basic design level and did not include all the details.

Finance
There was an initial debate as to whether the project should be financed in the private sector at all. The Netherlands distinguishes herself from other countries in that the public purse is, relatively, not so budget constrained. If the State had wished to carry out the HSL-South Project in the public sector, funds would have been available to do so. However, the State decided that the benefits offered by funding the project through the private sector through a PPP structure outweighed the risks involved in executing the project with public resources, partly due to the involvement of the so-called Public Sector Comparator (PSC).

The PSC gave a clear financial/economic insight into the pros and cons of both forms of project execution, without giving judgement for or against a PPP. The PSC compared the public variant (project execution by the state) with the most economically attractive bid received. For this purpose an extensive cost estimate and financial analysis of the project as a whole was required, which for obvious reasons was very costly. In order to do this comparison, an all but complete design was required. The most important feature of this PSC is the inclusion of risks that the State has to assume in the case of public execution of the project. The PSC process has indicated that a 5% excess value could be expected if the project was to be executed in the form of a PPP.

***Infraprovider* Contract Management**
The role of the Independent Engineer (IE), as it is known in South Africa, is being performed by the *Infraprovider* Contract Manager (IPCM). However, the role of the IPCM differs somewhat from that of the traditional IE. The main objective of the IPCM is to coordinate the activities of the different HSL players in terms of the work schedule and connectivity required between them. The IPCM is responsible for maintaining the contractual harmony between the State and the *Infraprovider*, but also performs other task organisations within the Dutch railways.

The roles of the IPCM are the following:

- Contract management, acting on behalf of the State as one of the parties in the contract.
- External Interface Management, related to design and construction management referring to existing Dutch rail infrastructure
- Civils Interface Management, related to the substructure contracts
- Technical Compliance and Performance Management, related to compliance verification and validation of functional requirements
- Programme Management, related to schedule and quality

The IPCM therefore focuses on process management and not technical control. The role of the IPCM in performing the function of “client” is in The Netherlands in itself unique. This is the first time that such an independent organisation assumes the responsibility of the public component in a PPP.

Choice of a Train Operating Company (TOC)

Although the Nederlandsche Spoorwegen (NS) (Dutch railways) is considered as one of the best railway companies in the world, with first hand knowledge of train operating conditions in The Netherlands, the Dutch Government did not automatically award the operation of trains on the HSL-South to the NS. The reasons for the decision are the following:

- High speed transport by train is a new modality
- High speed transport by train is a new market with new market players
- European guidelines sets conditions for the award
- Financial boundary conditions

The State decided that the time was ripe for the introduction of a greater degree of competition in the Dutch railways, generally and for a wholesale review of the legal and regulatory framework associated with the railways system in The Netherlands. Accordingly, at the same time it was seeking to encourage consortia to bid for the Infraprovider Project, the State was announcing the re-organisation of the functions carried out by the government organisations responsible for traffic control, capacity allocation and legal ownership of the railway network.

Although the contract for the operation of trains on the HSL-South was eventually awarded to a consortium between the NS and KLM, the procurement was done on the open market. Both local and international companies had an equal opportunity in bidding.

Lessons and Pointers

Although far from being completed, this project offers a number of lessons and pointers for future rail transport mega-projects, specifically referring to PPP's and DB contracts. There are a number of parallels with the proposed Gautrain project which make the HSL South Project an ideal learning opportunity. This is not defined in detail, but rather described briefly as follows;

- A lot of time was spent on consultation with bidders for the Infrastructure Provider project before a decision was made on the preferred bidder. This lead to additional cost to the bidders and the State. However, experience on the HSL project was that a long consultation period lead to a better understanding of the intentions of both parties and therefore contributed to a better analysis of technical proposals.
- The involvement of the private sector was intended to provide an innovative approach to the provision of the new line. The private sector's willingness to assume the risk of technical innovation is however limited, due to the risk averse nature of lenders.
- It is important to clearly define the legal and regulatory framework in which the contractor will be operating.
- It is important to reduce the number of interfaces inherent in a project, both technical and non-technical. The structure of the HSL South Project created a tremendous amount of interfaces, each creating a risk that needed to be discounted in money terms to the State.
- It may be argued that the civil construction industry in The Netherlands was not prepared for the new roles required in Client / Contractor relations called for in functional requirements based contracts. Both the Ministry of Transportation and the contracting fraternity found it difficult to adapt to the change from the traditional specification type contracts to the design and constructs type contracts.

- The decision to introduce the IPCM to fulfil the role of “client” seems to have the advantage of relieving the pressure off the limited manpower resources of the State. At the same time it offers an objective management of all time, cost and quality aspects due to its impartial composition.
- The breaking up of the HSL South Project into “chewable chunks” offered the opportunity for wide spread involvement from a variety of industries, stimulating innovation and growth.

Conclusions

The Dutch Government was prepared to take a non-conventional approach with each element of the project, including design, procurement, construction and project management. This created the opportunity for innovation, not only by the local industry, but the international rail transportation fraternity. This created healthy competition, with the inevitable added value to the State.

The true success of the HSL-South project will only be known in 2006 when the first high-speed trains start running. Only then will it become clear if the organisational model for the project adopted for performing the project is as effective as the theory describes it to be. In the mean time this project serves as a training ground for innovative project performance, specifically related to PPP transactions and DB contracts.

The experience that the railway industry has gained and will be gaining, puts The Netherlands at the forefront of large scale rail transportation projects. In particular, Dutch consulting engineering and project management firms now have an invaluable contribution to make in similar project across the world.

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Mr J M Marais (Hannes) was born and bread in Johannesburg and qualified as civil engineer through the University of Pretoria in 1985. He recently completed a Master Degree in Project Management at the same University.

Hannes is an employee of Stewart Scott International. He has recently been seconded to DHV Consulting Engineering in The Netherlands, as part of a staff-exchange program between the two companies. He lives in Amersfoort, The Netherlands, with his wife and 2 children. The intention is that they will return to South Africa in June 2004 (over two years).

DHV is the main consultant on the HSL South project, currently the biggest infrasturcture project in Europe. The project involves the implementation of a new high-speed rail link from Amsterdam to Antwerp through Public Private Partnerships. Hannes has been seconded to the client, Dutch Department of Transport, as advisor on contract management. He is specialised in Systems Engineering and Quality Management and responsible of systems verification and validation.

The experience that Hannes is gaining on this internationally acclaimed project will be invaluable to future rail projects and PPPs in South Africa.