Brabo I Light Rail is the first PPP project for public transport in Flanders, Belgium. The project was procured by two Procuring Authorities under two separate contracts: 1) a contract for the extension of the existing light rail network and a substantial tram maintenance depot; and 2) a contract for the comprehensive renewal of associated road infrastructure. The Project Company, Project Brabo 1 NV, is responsible for the design, construction, financing and maintenance of the project, which is based on availability and performance-based payments. The project was delivered without delay and, during its five years of operation, the most significant events were the refinancing in March 2016, revocation of the Project Company's construction permit in 2011 and challenges related to the interface of the project with a separate newly constructed part of the light rail network. In general, the project is perceived as a success by both Procuring Authorities.

The project has a bespoke financing structure associated with the earliest Belgium PPPs, where the Procuring Authorities have a shareholding in the Project Company. One of the two Procuring Authorities, De Lijn, invested in 24% of the Project Company's shares at financial close in 2009 through its investment company Lijninvest N.V., which was set up in 2007. The second bespoke feature of the project is that it includes a separate design, build, finance contract with the City of Antwerp related to the renewals.
of the road infrastructure within the municipality. The City of Antwerp was primarily involved during construction, and at construction completion, the milestone payment from the City of Antwerp was used to repay the short-term finance raised by the Project Company. The City of Antwerp also has an obligation to make quarterly contributions for specific maintenance services during the operations phase.

SUMMARY LESSONS LEARNED

• Contemplating known changes to the scope of work early (even where the costs are not known) makes it helpful to manage once the costs become known.
• Poor document control management can slow down and create inefficiencies during transition periods.
• Inadequate timing for approvals of change orders may lead to delays and create tension in the relationship between the Project Company and the Procuring Authority.
• Building on relationships with all relevant stakeholders can assist in managing issues with permitting in an efficient manner.
• The Project Company may need time to adjust into the operations phase and become fully compliant with its operational KPIs.
• Failure to meet KPIs may require proactive management from both parties to resolve the cause of non-compliance.
• Creating a working group and appointing a financial advisor during a refinancing can assist the Procuring Authority to attain a positive outcome from a refinancing of the Project Company.

PROJECT INCEPTION

Goals and Objectives of the Partnership

In August 2007, the government body responsible for the delivery of the Antwerp Mobility Plan, Beheersmaatschappij Antwerpen Mobiel, launched the tender for the project. The scope of the project consists of 7km of light rail infrastructure in the eastern part of the City of Antwerp and a large tram maintenance depot for 53 trams in Wijnegem, as well as the comprehensive renewal of associated street infrastructure. The aim of the project is to facilitate the connection from the city centre to remote municipalities, in order to reduce the number of cars in the city by improving connectivity and promoting public transport. The project is part of the Antwerp Mobility Plan which was initiated in 2003, consisting of several improvement projects with the aim that, by 2020, half of all journeys in the region were to be made by public transport, bicycle or on foot.

Though the procurement was led by Beheersmaatschappij Antwerpen Mobiel, in May 2009, the Project Company entered into the two contracts (here collectively referred to as the PPP contract) with the Flemish Road Agency and the Flemish public transport company, De Lijn. The first contract period is 28 years, including three years of construction with the possibility of an extension of 10 more years in relation to the rail network extension and maintenance depot with De Lijn. The second contract period is 38 years, including three years of construction for the renewal of the associated street infrastructure with the Flemish Road Agency.

With construction works to be carried out within a specified time period and within a constrained urban area, the Procuring Authorities’ rationale for this ambitious scope was to keep responsibilities in the hands of one party and allow for the allocation of interface risks to the private sector, creating an incentive to manage them adequately. The main advantages were accountability, value for money and nuisance mitigation.

The Economic and Political Environment during Inception

At the time of writing this case study, the successes of projects like Brussels Airport Rail Link PPP and Brabo 1 Light Rail PPP have developed into a well-established procurement method for numerous infrastructure projects, which subsequently followed. The project reached financial close during the Global Financial Crisis, in the third quarter of 2009. At that time, there was no policy commitment to PPPs within the central government. The rationale for using the PPP model for infrastructure projects was developed by individual Procuring Authorities on a project-by-project basis.

The economic environment at the time of financial close made it very difficult for the project sponsors to arrange a long-term debt facility. As such, the project was financially closed and subsequently constructed under a 10-year loan tenor. As a consequence, the project had to be refinanced within the contract period. The Flemish Government also assisted the Project Company in mitigating against this refinancing risk by guaranteeing access to finance after five to ten years, in the event commercial refinancing was not possible at appropriate pricing.

MANAGEMENT OF THE PPP CONTRACT

In order to understand the complexity of this project, it is important to realise that the project has two Procuring Authorities. The first Procuring Authority is De Lijn, which is responsible for the rail infrastructure and the exploitation of public transport within Antwerp and Flanders in general. The other Procuring Authority is the Flemish Road Agency, which is responsible for the provincial infrastructure connecting the different municipalities in Flanders. The final relevant government body is the City of Antwerp, which is responsible for the infrastructure of the city (streets and pavements).
During the tender process, De Lijn took the lead. In combination with the Flemish Road Agency and the City of Antwerp, a steering board was created to represent their joint interests during the construction phase. De Lijn also became involved in the Project Company as an equity investor with 24% of the Project Company’s shareholding.

**Construction Phase**

Other than an issue with the construction permit, the construction period progressed without significant issues. The key construction contractors during the construction period were Heijmans for the road infrastructure, Franki for the tram depot and Frateur de Pourcq for the rail infrastructure.

One issue that occurred during construction was a situation in which the Project Company’s construction permit was revoked on 15 May 2011 because of public objections to the proposed developments. On 27 September 2011, a new permit was issued with some additional conditions. The equity position of De Lijn proved beneficial when the approval was revoked by the court. Together with the private equity investors in the Project Company, De Lijn worked as a partner to resolve the issue. Although construction works were suspended on the light rail section affected by the revoked permit, other works subject to different permits continued. In the end, the delay of four months did not have any material impact on the overall completion and timing of the project.

The project’s construction progress was monitored by an independent certifier until completion was achieved.

**Operations Phase**

Transition from construction to operations was challenging due to the loss of knowledge on the public sector side and difficulties associated with accessing data and information from the construction period. According to the Procuring Authority, a better document management system could have prevented this.

The key operations contractors are Heijmans, Franki and Frateur de Pourcq. The operations and maintenance activities are carried out in line with the operational model that was based on the financial model agreed at financial close. The Procuring Authority has access to the operational model in order to review it on an annual basis and check the actual maintenance expenditure is recorded correctly and in line with the forecasts.

The overall operational performance of the project has been good and there have been minimal deductions to date. Failures are minor and there have been no critical issues for the purposes of the KPIs. There was an issue with excessive noise due to the use of the light rail. The mitigation, however, was proactively managed by both parties. Data was collected during noisy periods and appropriate mitigations (such as adding a lubrication installation on the tracks) were developed and implemented.

**Performance Monitoring and KPIs**

Within the project, the KPIs agreed upon were overall considered to be relatively generic compared to other similar projects. The KPIs are divided into critical (24 hours to remedy, always a penalty) and non-critical (more remedial time, only a penalty after not meeting remedial deadline).

Due to the generic nature of the identified KPIs, the Procuring Authority and Project Company had more discussions about the intention and applicability of payment deductions in the initial years of the operations period. However, after two years, an operational understanding of KPIs was developed and a working solution was found by both parties. The Project Company uses software to monitor KPIs, to which the Procuring Authority has no access.

The Procuring Authority reviews and validates performance failures and payment deductions recorded in the Project Company’s quarterly reports and through their own data.

**Change Management**

The protocol for change orders is prescribed in the PPP contract and the change procedure itself is considered well-defined and robust. However, the timelines for reviews and approvals are considered too tight.

In total, the project has been subject to several variations during operations to date (most of which were minor). One variation, however, was a key event related to rail interfaces and it is discussed in detail below under the heading “Key Events”.

With regard to the changes noted, the total number is considered low for a project of this size. Most of the changes were requested by the Procuring Authority.

**ROLE OF GOVERNMENT**

The roles of the Procuring Authorities differ depending on the Procuring Authorities’ and other relevant government bodies’ interests and jurisdictions in the project. During the construction phase, De Lijn took the lead in the relationship with the Project Company, whereas the Flemish Road Agency’s interests are represented through the steering board which oversees the entire project. This board consists of two members from De Lijn, two members from Beheersmaatschappij Antwerpen Mobiel and five members from the Project Company. Beheersmaatschappij Antwerpen Mobiel and De Lijn have both been equity investors since 2009.

For the contract with De Lijn, operational issues are addressed during contract management meetings held quarterly between De Lijn, the Flemish Road Agency and the Project Company. In the event that operational issues need
APPENDIX A: CASE STUDIES

to be escalated, a steering board meeting between all the shareholders on both the Procuring Authorities’ and Project Company’s side becomes the relevant forum. In addition, De Lijn also runs a quarterly internal steering committee meeting for all De Lijn’s PPP projects, where matters of high importance are discussed on a project level, as well as an overall portfolio level.

RELATIONSHIP BETWEEN THE PROCURING AUTHORITY AND PROJECT COMPANY

The relationship between the Project Company and the Procuring Authorities is good. To date, there have been no significant disagreements or disputes.

During the operations phase, the Project Company receives a unitary payment based on the availability and performance standards from the Procuring Authorities, which is subject to payment deductions. The financial relationship with the City of Antwerp was based on a milestone payment once the construction was completed. Additional to the availability payments, the Procuring Authorities contribute to maintenance costs specified in the contract.

Team Set-Up and Staffing

During the operations phase, De Lijn has one contract manager and two technical staff.

Communications

During construction, the parties used a SharePoint to manage documents and data. Its use during the operations phase was limited to management activities, such as financial and corporate reports, and monitoring.

The meetings during the operations phase are performed on several levels. As needed, technical people meet to discuss daily issues of a technical nature. Contract managers from the Procuring Authorities and the Project Company meet quarterly to discuss commercial matters, such as KPIs, performance failures, etc. Also, on a quarterly basis, the shareholders from the Procuring Authorities and Project Company meet at a steering board level to deal with any escalated issues as applicable. Overall, the frequency of meetings is considered adequate.

Although performed on a regular basis, audits of the project’s performance are not published.

KEY EVENTS

Change Order

There was one major change order, which was anticipated at financial close. The value of the change was estimated at €2 million. Because of the expansion of the light rail network of Antwerp, some technical changes to the existing network had to be accommodated, to allow for interfaces with the newly constructed parts of the network. As a result of this change, the use of the rail infrastructure built within the scope of this project has also increased.

The costs associated with the change were borne by the Procuring Authorities and consisted of a fixed investment part to cover the capital cost of the change, whereas the increased maintenance costs are paid through higher availability payments. The amount of this payment was subject to commercial negotiations.

The key issue was based on higher usage than anticipated, which would lead to more wear and tear and increased maintenance costs. This change, however, was anticipated in the contract drafting but at financial close it was not possible to devise a formula which would estimate the impact on the asset condition and forecast the costs needed to provide additional maintenance.

This issue was therefore managed by increased (independent) monitoring to assess the asset deterioration due to the increased frequency of use. The higher than anticipated usage will then be quantified, which may result in agreement between the parties on the value of the availability payment.

Refinancing of Senior Debt

Another key issue was the refinancing of senior debt. Due to the financial crisis at the time, the Project Company did not succeed in raising long term debt financing at financial close. As a result, a refinancing was completed in 2016 and new debt was raised for the remainder of the contract period.

De Lijn took the lead in the refinancing, as part of the overall refinancing that it was leading across its portfolio of projects. De Lijn and the Project Company created a working group for the refinancing and hired an external financial advisor. The equity position of De Lijn was particularly beneficial during the refinancing in terms of sharing risk and the project was also joined by a new lender. It took eight months to refinance.

LESSONS LEARNED

Contemplating known changes to the scope of work early (even where the costs are not known) makes it helpful to manage once the costs become known.

Although an increased use of the rail infrastructure and different rolling stock was anticipated at financial close, there was no relevant data available to forecast the costs associated with increased maintenance. The fact that the contract provided an option to allow for increased use made it possible to devise a formula later, which would, through carefully designed monitoring of asset deterioration, estimate the impact on the asset condition and forecast the amount of additional costs needed to provide additional maintenance. As such, there were no significant issues.
related to the payment mechanism when the project scope was linked to the wider light rail network of Antwerp and some sections of the project were subject to greater usage and therefore more maintenance. The joint efforts of both De Lijn and the Project Company to assess the financial impact were perceived as exemplar by De Lijn.

Poor document control management can slow down and create inefficiencies during transition periods.
The transition from construction to operations was perceived as challenging by the Procuring Authorities due to staff turnover and an inadequate document control system. This made the transition slow and inefficient. It is therefore of critical importance that a document and information management system is carefully designed, adopted from financial close and continuously and consistently used throughout the contract duration.

Inadequate timing for approvals of change orders may lead to delays and create tension in the relationship between the Project Company and the Procuring Authority.
The protocol for change orders is prescribed in the PPP contract and the change procedure itself is considered well defined and robust. However, the timelines for reviews and approvals are considered too tight. Inadequate timings may lead to delays and create tension in the relationship between the Project Company and the Procuring Authority. A workable solution acceptable by both parties is needed as soon as the protocol for change orders is found to be deficient. This should preferably be agreed to before the contract is signed.

Building on relationships with all relevant stakeholders can assist in managing issues with permitting in an efficient manner.
One issue that occurred during construction was a situation in which the Project Company’s construction permit was revoked because of public objections to the proposed developments. A new permit was, however, issued a few months later. Together with the Project Company, De Lijn worked as a partner to resolve the issue. Although construction works were suspended on the part of the light rail section affected by the revoked permit, other works subject to different permits continued. In the end, the delay of four months did not have any material impact on the overall completion and timing of the project.

The Project Company may need time to adjust into the operations phase and become fully compliant with its operational KPIs.
As a result of the generic nature of the identified KPIs, the Procuring Authority and Project Company had more discussions about the intention and applicability of payment deductions in the initial years of the operations period. However, after two years, an operational understanding of KPIs was developed and a working solution was found by both parties.

Failure to meet KPIs may require proactive management from both parties to resolve the cause of non-compliance.
The overall operational performance of the project has been good and there have been minimal deductions to date. Failures are minor and there have been no critical issues for the purposes of the KPIs. There was an issue with excessive noise due to the use of the light rail. The mitigation, however, was proactively managed by both parties. Data was collected during noisy periods and appropriate mitigations were developed and implemented.

Creating a working group and appointing a financial advisor during a refinancing can assist the Procuring Authority to attain a positive outcome from a refinancing of the Project Company.
Due to the financial crisis at the time of financial close, the Project Company did not succeed in raising long term debt financing. As a result, a refinancing was completed in 2016 and new debt was raised for the remainder of the contract period.
De Lijn took the lead in the refinancing as part of the overall refinancing that they were leading across its portfolio of projects. De Lijn and the Project Company created a working group for the refinancing and hired an external financial advisor. The refinancing took eight months to complete.