

A New Sewage System with Best Value Procurement

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The adoption rate of the BVP/PIPS or the Best Value approach (Kashiwagi 2010) has been rather high in the Netherlands (van de Rijt & Santema 2012). One of the largest industrial companies in the Netherlands, Tata Steel in IJmuiden (part of Tata Steel Group) has applied the principles of BVP/PIPS to select a vendor for a sewer renovation. BVP/PIPS is a procurement method that aims to select the most suitable vendor for the job, to spur this vendor on to highest performance, and to reduce the client's management and control tasks. The case shows that a different way of procuring by the client leads to different behavior of the vendor and to a higher performance of the vendor and less risk.

Keywords: Best Value, BVP/PIPS, sewer renovation, Tata Steel

Introduction

Tata Steel in IJmuiden is part of Tata Steel Group, one of the largest steel companies in the world. The Dutch part of the company has a long history. It was established in 1918 as Koninklijke Nederlandse Hoogovens en Staalfabrieken NV (the Royal Dutch Blast furnace and steel factory). In 1999 it merged with British Steel and the name was changed to Corus. Consecutively Corus was acquired by Tata Steel as its European branch in 2007. Other parts of Tata Steel Group, aside from Tata steel Europe, are Tata Steel India, Tata Steel Thailand and NatSteel Asia. Tata Steel Group is located in over fifty countries, is capable of producing 28 million tons of steel every year, and provides a work environment for over 80.000 employees. The focus of this case is the application of Best Value Procurement at Tata Steel in IJmuiden. In 2010 the decision was made to handle a project of Sewer renovation with this innovative way of working. The case study is interesting and provides valuable lessons learned, as the vendor who was awarded the project, and executed the project as a high-performer, was the incumbent vendor. The following aspects will be discussed:

- The context: organization
- The scope of the project.
- Preparation of the project.
- The tender process
- The pre-award phase and performance
- Conclusions and reflection

The Context: Organization

Tata Steel in IJmuiden is part of the European branch of Tata Steel Group. Over 9000 people work at Tata Steel in IJmuiden. Every year they produce and deliver more than 7 million tons of

high-quality coated steel, shaped in rolls, as well as providing design, technology and consultancy services. The steel produced in IJmuiden is primarily used in the automotive, construction and packaging industries. Other goods produced from the steel at IJmuiden are batteries, pipes, industrial vehicles and household appliances such as refrigerators and cookers. The company property is 750 hectares and directly borders the North Sea in the towns Heemskerk, Beverwijk and Velsen (TATA Steel Europe 2012).

Tata steel is currently in the midst of a significant change process whereby a new operating model is introduced. Business units are being dismantled. Sales, Marketing and Supply Chain are centralized and production locations are transformed to cost-centers with a clear focus on manufacturing excellence. Ever since the Corus merger and consecutive takeover by Tata Steel, the procurement process has been centrally organized. Globally, procurement is managed in a hybrid organization form.

The sewage project belongs to the responsibilities of the department Site Facilities. Site Facilities manages a number of facilities within the location in IJmuiden. The aforementioned developments give reason to centralize activities in order to work more efficiently and effectively, rather than having work fragmented across nine different factories. The Best Value approach was considered as a possible method to fulfill the ambitions of Site Facilities to work more efficient.

The Scope of the Project

The factories of Tata Steel use water in their processes. Aside from the rainwater and sanitary sewer the water management system includes a sewage network for company waste. This sewage system needs to function properly in order for the production progress to operate at low risk. Maintaining this sewage system requires a long-term approach, in which inspections, repairs and renewals are all included.

In April 2010 a first presentation on the Best Value Approach took place in IJmuiden with a number of senior managers. In 2010, the Best Value Approach was still in its early phase (early adopters) (van de Rijt & Santema 2012). The conclusion of the meeting with the senior managers was that there was a solid basis for using the BV-approach. During the spring of 2010 a number of potential projects were identified. Eventually the sewage renovation project was chosen as a pilot project. The advantage of this project is that it had a relatively short lead-time and was straightforward. An additional reason for an alternative approach concerning this project was that previously similar projects did not go as desired. Frequent interaction and communication between the client and vendors led to inefficiency, which in turn led to additional work. The idea of this project pilot was to increase efficiency and minimize non-value adding communication, in line with the Best Value approach (Kashiwagi 2010).

The scope of the activities concerned the inspection of a number of sewage pipes on the IJmuiden property and cleaning and renovating parts of previously inspected sewers. The available budget (the ceiling price) was € 632.500.

The Preparation of the Project

In August and September 2010, preparatory meetings were held with the core team of Tata steel. This team consisted of a number of technical experts in addition to a representation from the Procurement department. Although the technical specifications of the project were already defined, the sessions allowed the scope to be refined. The ensuing discussions during this refining of the scope led to the decision to leave a number of items out of the tender-document, simply because it didn't fit with the philosophy of Best Value. One such example was a risk assessment as done by Tata steel: in the "standard" applications of Tata Steel the suppliers are asked to present the way they mitigate the risks that Tata identifies. One of the intents of Best Value is to identify which risks the vendors perceive (and which risk mitigation they propose). Best Value is about selecting the vendor who is most capable of seeing and managing risks (mainly risk outside their control). This does not match with having the vendors answering questions on prescribed lists as defined by the client.

During this first phase a shortlist of possible vendors was made. Market research and earlier experience was used to ask six vendors if they were interested to do this project. All six proved to be interested. As Tata Steel is a private firm (and not a public organization), there were no legal requirements or boundaries on the selection criteria. During the preparation phase the selection criteria were defined (Table 1). Past Performance was not used as a selection criterion.

Table 1

Selection criteria (Van de Rijt & Santema 2009)

No.	Criteria	Weight
1	Price	25%
2	Scope	15%
3	Risk analysis and value-added (RAVA)	25%
4	Schedule	5%
5	Interviews	30%

The RAVA plan consisted of the following three elements (Kashiwagi 2010), which lead to one final mark concerning the quality of the RAVA-plan:

1. Technical Risk
2. Risk the vendor does not control
3. Value adds

On September 23, 2010 the first meeting with the six vendors was held. The objective of this meeting was initially to introduce the philosophy of the Best Value approach. Although the invitation for the meeting was specifically directed to project leaders, site superintendents and main subcontractors, a number of sales directors attended the meeting. The client foresaw this and therefore a second training meeting was already planned two weeks after the first meeting. During the first meeting the focus was the philosophy and the procurement method of Best Value, while the second meeting was focused on the philosophy of working "post-award" and devoted much attention to the actual content of the project. The second training day was also used to inspect the domain with the selected vendors (a joined tour on the site of IJmuiden).

After the meeting, the opinion on the part of the vendors was in general that Tata chose an interesting and innovative way of tendering/procurement. The market was pleased that they were given the opportunity to present their own ideas and qualities within the communicated ceiling price (budget). The vendors were also given drawings and additional information about the sewer as well as inspection images that were made during prior renovations. The deadline for submitting the plans was five weeks after the first market meeting. In the meantime there was an opportunity to ask questions. It appeared that a number of vendors were having difficulty with the freedom that Tata had given them. Below is a list of some examples of questions that were asked during “the notification” phase, and include the answers given by Tata, which are in line with the BV philosophy (Table 2). Many questions were “technical” questions and concerned the expertise of the vendors.

Table 2

Common questions and responses

Question	Answer Tata Steel
Is it possible to shut connections to the sewage channels or is it required to clear the connections by pumping the water out of the channels?	We assume this to be the expertise of the vendor
Do you require the entire sewage system to be verifiably calculated concerning the presented debits?	We assume this to be the expertise of the vendor
What is the definition of a sewage channel? (does it include for example: pits, pit edges connections etc.)	We assume this to be the expertise of the vendor
Who will be performing the inspection pre- and post-renovation and cleaning of the sewage channels?	As a supplier you can indicate in “scope document” which activities you assume to be doing yourself and which activities you assume to be done by the client
Which standards and directives are we required to use?	We assume this to be the expertise of the vendor. Furthermore the tender documents mention that the Tata specific standards can be found at www.corusveiligheid.nl

The Tender Process

At the end of October 2010, six offers were presented to the contracting officer (this role was fulfilled externally by Jeroen van de Rijt). Of the six offers, one was above the communicated ceiling prices. During the training sessions it was explicitly stated that vendors who would offer above the available budget of €632.500 would be excluded from further participation. The contracting officer verified the price with the company in question and the vendor explained that they were aware of their price and their potential disqualification, but nevertheless decided to send all their tender documents. The regulation of the procedure requires the tender documents of a disqualified company to be put aside and not be taken into consideration; essentially meaning that the effort put into the offer by the vendor was unusable.

The five valid offers were (anonymously) given to the members of the review team. They individually reviewed the offers with all the tender criteria. They used a four points scale as:

- 1= very insufficient
- 4 = insufficient

- 7 = sufficient
- 10 = excellent

The individual scores of the team members were sent to the contracting officer (Table 3). During the meeting the individual scores were “revealed” and the members came to a consensus review per supplier on each of the 3 criteria (scope, RAVA and schedule). Prior to the review, the team had practiced with a test case in order to recognize the “dominant scores.” During this practice case it was clear that some team members needed more time to understand the process. Nevertheless, the practice case did contribute to an easier review process during the real reviews.

Table 3

Team scores

No.	Criteria	Vendor A	B	C	D	E
1	Scope	4	7	7	7	7
2	RAVA	1	4	7	4	4
3	Schedule	1	7	10	1	7

Consequently, it wasn’t always clear for the vendors to identify what information went into each of the different submittals. Some mixed up “technical risk” with “risk outside their control” and with “value adds.” Because the evaluation team evaluated the RAVA as one document (and not as three separate parts) it eventually did not matter during the rating process: the scores were not influenced. It did; however, illustrate the difficulty the vendors had to think this way. It was noticed that the vendors found it hard to formulate their plans in a SMART way (Specific, Measurable, Acceptable, Realistic, and Timely). This applies to both the scope and the documents of the RAVA-plan.

The proposed scopes of the various vendors were very different in nature. There are different techniques possible to renovate a sewer. It is possible to “plast plasters” on weak spots inside the sewer, it is possible to bring on “a new stocking” inside the sewer (the so-called relining) and it is also an idea to totally renew the sewer. Each method has its own advantages and disadvantages. There was a difference in the offered scopes of the various vendors. In table 2 one can tell that 4 of 5 vendors got the same scores on the criterion “scope”. The team members didn’t give a “technical review” about the direction of the solution and did not fall into the trap of judging an expert (in this phase the vendors are considered to be the experts). The members of the rating committee only rated the way the plan was substantiated (with verifiable performance information) and which solutions were formulated in a SMART way. Four out of five vendors presented their solutions in a sufficient way. Only vendor A did not do a good job at describing why they choose their solution. The proposal lacked motivation. This vendor also scored sub-par on the other criteria. The following are examples of risks and solutions that were submitted by vendor A:

- Risk: Extreme winter weather conditions will cause for extension of the planning
 - Solution: applying protective risk measures up till -4 C
- Risk: the delivered footage is dated

- Solution: pre review the relining and anticipate after the results are clear. Possible scope change.

The risks are adequate, as they are beyond the control of the vendor. The mitigation of the risks; however, is in contrast to the philosophy of Best Value (e.g. what's going to happen when the temperature is colder than -4C? And what effect will this then have on the planning?). The mitigation of the second risk is not what Tata steel envisioned a good vendor to be: starting to contemplate on changing the scope at this moment (without becoming specific) is not really SMART and not in the best interest of the client. It was decided to use this dominant information as a filter. Based on the scores of the quality of the documents, vendor A was the only vendor that didn't qualify for the interviews. All the other vendors went to the interview round.

Vendor C had a considerable better RAVA plan and a better schedule than the other vendors. The following risks submitted by vendor C illustrate that they had more SMART characteristics than vendor A:

- Risk: There is more risk of frost during the wintertime. If that's the case it's not possible to use the sewer renovating technique "relining" (envisaged by us). This has direct consequences for the sewerage activities and is disturbing the production process of Tata Steel.
 - Solution: The relining activities are scheduled as far as possible at the end of the winter. This is the period with the least chance of frost. There is also a go or no-go-decision made 5 days before the beginning of the renovation activities. This decision will be communicated directly. If a no-go-decision is made the activities will be planned again. In our planning we have schedule 10 extra days for possible extension of the planning. These 10 days are the average number of frost day in January, February and March of the last three years according to the statistics of Building Netherlands.
- Risk: The state the sewage canals are in could be so bad that they could collapse during cleaning. Due to the obstacles relining is not possible on that part until that part is restored. With rupturing the sewer also gives an additional delay and extra costs. We are expecting this risk primarily on the pipes of the Deldenweg, Drijverweg, PE-hal and PC hal.
 - Solution: With these parts of the pipes we use an adapted cleaning technique. We also use a special camera to inspect in real time. For all the pipe diameters, we have everything on stock and available in <8 hours. There is also material present on location to start digging and clearing and replacing the pipes within an hour. To directly start digging we make sure there are groundwork instructions present for all parts of the sewage. If a part of a pipe would collapse it can be replaced immediately.

After setting the final scores with quality criteria "scope", "RAVA" and "Planning," the names of the different suppliers were revealed to the team members. After that the Contracting Officer called the suppliers and made the final schedule of the interviews. Vendor A was informed that they would not be interviewed because they didn't meet the required score. Three key individuals were identified to be interviewed from each vendor:

- Site superintendent
- Site intendant
- The most important under contractor

Each interview lasted up to one hour. The interviews took place shortly after each other. This made interviewing an intense process. The choice was made to give each key individual a separate score (thus: 3 ratings per vendor, instead of 1 overall rating for the whole team). This gives a maximum transparency and a maximum accountability. Again it turned out there was dominant information. Vendor C scored the best again: twice a “10” and once a “7” score on the interviews. Two site-intendants (of vendor B and D) failed their interviews: they both scored a “1.” Vendor C turned out to have the best quality by far (Table 3).

To calculate the best vendor, the relative rating process of Kashiwagi (2010) was used. This differs from the model that is most widely used in the Netherlands to determine the best vendor, the Most Economically Advantageous Tender (MEAT). However, irrespective of the method of calculating, vendor C was the best vendor by far (Table 4 and 5). For competition considerations the overview doesn’t contain prices (and the corresponding points). After consideration of the price the total ranking didn’t change. Vendor C stayed the best followed by E,B, and then D.

Table 4

Unweighted vendor scores

No.	Criteria	Vendor A	B	C	D	E
1	Price					
2	Scope	4,00	7,00	7,00	7,00	7,00
3	RAVA	1,00	4,00	7,00	4,00	4,00
4	Quality interview 1	-	4,00	10,00	4,00	7,00
5	Quality interview 2	-	1,00	7,00	1,00	7,00
6	Quality interview 3	-	7,00	7,00	4,00	10,00
7	Time schedule	1,00	7,00	10,00	1,00	7,00

Table 5

Weighted vendor scores

No.	Criteria	Vendor A	B	C	D	E
1	Price	8,57	15,00	15,00	15,00	15,00
2	Scope	3,57	14,29	25,00	14,29	14,29
3	RAVA	-	4,00	10,00	4,00	7,00
4	Quality interview 1	-	1,43	10,00	1,43	10,00
5	Quality interview 2	-	7,00	7,00	4,00	10,00
6	Quality interview 3	0,50	3,50	5,00	0,50	3,50
7	Time schedule	8,57	15,00	15,00	15,00	15,00
8	Quality criteria	-	45,21	72,00	39,21	59,79
9	Ranking based on quality criteria	-	3	1	4	2
10	Ranking including price	-	3	1	4	2

Immediately after the ranking, the vendors were informed about their score. Vendor C went to the pre-award phase. The other vendors were informed briefly by telephone concerning their scores (including a brief explanation on their respective scores).

Later on in the process a detailed debrief session with all the suppliers was held (each vendor separately). During these meetings the different criteria and the motivations of the scores were discussed. All the suppliers accepted the invitation for the evaluation meetings, except for the supplier whose offer exceeded the maximum ceiling price. The evaluation sessions with each of the suppliers lasted approximately 45 minutes.

The objective of the meetings was to explain the ratings and to zoom in on the process. All five suppliers appreciated the opportunity given to them to gain more insight in the entire process and the evaluation. There was an overall positive response to the way in which Tata-Steel had tendered the project: finally it was not lowest price, but the best value that determined the winner of the tender. Even those suppliers that did not win the contract were very positive about the process. The suppliers were very honest about the way they handled the process and were able to accept their place in the ranking. The suppliers saw this tender and ensuing evaluation as an opportunity to learn for possible future tenders.

During the evaluation sessions it needed to be stressed that the scores of the interviews should be interpreted correctly by the team of the vendor: the scores did not reflect the abilities or capabilities of the key individual in general terms, but rather the extent to which the person in question understood and apprehended the Tata sewage project from beginning to end. The interviews often confirmed the ratings on the submitted plans and in particular the RAVA plan. During the evaluation meetings with the suppliers it became clear that the suppliers needed to get used to the new way of thinking. The “old way of thinking” was still very much engrained. The suppliers were critical about one part of the tender process: they had preferred to be informed of the winner of the tender earlier in the process. It appeared that the suppliers were only informed of this decision during the evaluation meetings. This was a point of improvement in the process.

The Pre-Award Phase and the Execution

Immediately after the ranking, the pre-award phase started with the best supplier (BAM Wegen). Interestingly, this vendor was also the incumbent vendor. A list of sixty-seven risks and concerns was compiled by Tata, this list included the risks as described in the bids of all the suppliers in the tender process, as well as additional risks and concerns on part of Tata. The primary goal of the pre-award phase was to allow the supplier to envisage and comprehend the project from beginning to end.

After the pre-award-kickoff the intended contractor started with the project. The mitigation measures were formulated for each potential risk and a detailed planning was made. The contractor proposed to take more time for the pre-award phase so he could translate the preliminary design to a final design. Although this is not necessary in the pre-award phase, it showed the level of ambition of the contractor. Upon completion of the pre-award phase, BAM Wegen was contracted in mid-December 2010.

Directly after the project was awarded a risk occurred; it turned out (after the schedule was finalized) that a certain part of the sewer could only be relined in week 2 of 2011. If it did not happen in week 2 the next opportunity would be week 52 of 2011. It would of course have been best if Tata Steel would have told the vendors at the start of the project that the relining of this certain part was supposed to be done in week 2. Site Facilities however was not aware of this requirement. BAM was very proactive in solving this issue and proposed to divide the activities in two halves, each with their own delivery of parts. The way this risk was mitigated scored a “10” in the Weekly Risk Report. The project was eventually completed with a satisfaction rate of 9.84. The following comments by members of the project team reveal invaluable lessons learned:

- “Aside from the training on Best Value, the preparation was relatively easy for us. It was pleasant to work on realizing a goal rather than a specified price offering. Looking back upon the project we should have interfered more as Site Facilities in the pre-award phase. Not that BAM was underperforming, but in the execution it was evident that some information was still missing concerning how BAM would work. Next time there will be more frequent communication between Tata and the contractor in the pre-award phase. For me as a project leader the risk matrix was good to handle and the time I needed to spend on the project was minimal while still being well informed about what was going on. I found it annoying that the collaboration with the internal customer (the steel factory) delivered the most problems. Although the development can be seen as positive, it remains difficult to adjust to the new way of working. The steel factory, for example, did not want to do business with BAM but with Site Facilities, while the whole design of the project was that that BAM was leading.” (Bakker, Wouter) Project Manager Tata Steel.
- “As a contractor BAM was stimulated to finish their tasks earlier, faster and better than usual. The subcontractor was selected earlier, the project was prepared in a more detailed manner, we were able to put more thought into the underlying interests of parties involved and we devoted time to developing intelligent solutions for the question. Our activation as a contractor is mainly caused by the given responsibility of several matters. We want to make the right choices, and now we were allowed to think together with Tata about the potential solutions. The effect was that there was more time invested in the preparation phase, but also that this extra time was recovered during the execution. The process was very controlled and that limited deviations and costs of failure.” (Mullink, Sander) Director BAM Wegen

Conclusions and Reflections

This case shows that Best Value Procurement also works for a sewer project on an industrial complex. The project was delivered on time and within budget, with a high customer satisfaction. The pilot made clear that the other way of tendering had influence on the behavior patterns of the suppliers. BAM Wegen took the lead as the “expedition leader” (where as an incumbent vendor, it used to be “managed, inspected and controlled” by the client). Previous experiences of Tata Steel with BAM Wegen showed that with other (more traditional) procurement processes ignited different behavior on the part of BAM. In other processes, BAM leaned more on Tata Steel. This procurement method has had a significant influence on the

execution of the project. The more room given to a supplier to come up with their own solutions during the procurement phase, the more logical it is that the contractor will be more proactive during the execution phase. The execution phase showed significantly fewer questions about the project, which resulted in less consultation time and communication between client and contractor, and less bureaucratic processes. As such the almost evident item of “additional work” (change orders) was avoided during this project.

The method has some demands on the team members that are involved on behalf of both the contractor and the client. The contractor is required to formulate their objectives very clearly (instead of complying with various technical requirements). Furthermore, it is important to be able to “let go.” The contractor needs to learn to be strict in risk management thinking. Furthermore it has proven to be difficult to specifically define the “product.” Both Tata Steel and the BAM Wegen concluded the pilot worked and that there was a need for more Best Value pilots within Tata Steel.

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