A Cross-Purchasing Portfolio Application of Best Value Procurement: Lessons Learned from Six Cases at Ballast Nedam

Guido J.E. Koreman, M.Sc.
Director of Purchasing, Ballast Nedam N.V.
The Netherlands
Email: g.koreman@ballast-nedam.nl

Ballast Nedam like any other business in the industry encounters failure due to purchasing based on low cost. Research shows that these tend to arise because of poor planning, non-compliance to agreements and incomplete project evaluations among others. Taken into account the effort put into the purchasing process one wonders why this kind of purchasing approach is still practiced. Best Value Procurement uses the expertise of subcontractors to streamline the total value chain by making the potential values and risks explicit and the management of each accountable to one party in the chain. The question is whether this kind of purchasing approach could and should be the approach to any given purchase done. In this paper lessons learned from six cases at construction company Ballast Nedam are described. Successful and less successful implementations are shown, as well as lessons learned on each of the PIPS filters. Conclusion is that the BVP/PIPS can be used in both construction and non-construction purchasing and in one-time projects as well as with IDIQ contracts.

Introduction

Failure cost in the construction industry is so dominantly present that one wonders if it is not an inseparable part of this line of work. Turnover rates of twelve percent are standard losses, and some say that it might be even higher when the whole supply chain is incorporated in the analysis. This kind of “waste” cannot be tolerated in a time where everyone is being scrutinized about their social responsibility.

This paper describes the implementation BVP/PIPS in Ballast Nedam, a large construction company in The Netherlands as having the potential to formulate an answer to the failure cost reduction (Kashiwagi, 2008: BVP, Ch 4.). The paper starts with a short description of Ballast Nedam as a company, its purchasing process and a description of the background on why BVP/PIPS was started. From 2008 to 2010 six projects in a range of needs were executed using the BVP/PIPS PIPS methodology. Two of these six projects were abandoned for various reasons; four projects were implemented with the methodology and one project is currently in preparation. The projects, adaptations to the BVP/PIPS process, the lessons learned in applying BVP/PIPS and the outcomes are described. The paper ends with considerations on using BVP/PIPS as a purchasing approach, its implementation results at Ballast Nedam and the conclusions. The paper tries to answer the following two research questions:
- Can BVP/PIPS aid in bringing the failure costs down?
- Is BVP/PIPS applicable to purchasing efforts in general?

**Ballast Nedam and its purchasing process**

Ballast Nedam group (BN) was founded in 1877 and is one of the major construction companies in the Netherlands and even among the major players in Europe (Source: Deloitte, 2009; annual reports of construction companies). The majority of the € 1.4 billion turnover in 2009 is realized in the Netherlands. On an international scale, BN operates selectively in certain fields of expertise. The company is active in more than one segment of the construction industry. BN develops, realizes, manages, finances and operates projects in the build environment. This encompasses living, working and leisure realized by housing and (public) buildings and offices. Infrastructural work enhances mobility, public environment, water management, energy and industrial building solutions.

Purchasing in the construction industry is dominantly transaction oriented (Dubois & Gadde, 2000; Thompson et al., 1998). BN is no exception to this rule: approximately ninety percent of the 2009 purchasing volume is procured by applying some kind of a tendering procedure on a project basis. The other ten percent is based on IDIQ contracts (indefinite delivery, indefinite quantity) (also known as framework contracts). As the majority of the projects are “execution based” only, the final decision for selecting a supplier is based on price; quality, logistics and other issues are taken into account. This is also in compliance with the industry “standard” (Duren & Dorée, 2008).

Having invested heavily in an “administrative system”, to ascertain a uniform and certain quality in the way BN addresses the market and puts its “rights and obligations” into contracts, a lot of effort is put into the supplier selection process. The final outcome of the building process in terms of earnings has not improved however. Failure cost or cost deviation for contractors in general have actually risen since 2005 by some fifty percent to ten percent, nine percent in 2009. Inadequate preparation resulting in unfeasible plans, not meeting commitments, and insufficient evaluations to learn from mistakes, are mentioned as the main causes for failure costs (source: USP Marketing Consultancy, January 14, 2010).

Although failure costs are perhaps just a matter of perception and recent awareness, the question remains “what can purchasing do to in helping to bring down the unforeseen costs in the building process?”

Establishing feasible plans by bringing in skilled suppliers, having them fulfill commitments by following a structure of accountability and working with suppliers on a cross-project basis in order to climb the learning curve of cooperation, are issues in the hands of the purchaser to accomplish.
Introduction of BVP

At the end of 2007 the purchasing side of BN took notice of the philosophy of BVP/PIPS. At the same time, one of the prefab concrete factories of BN, being a possible subcontractor in a project for a client, was confronted with the philosophy. Having the potential for being an answer to at least two of the challenges mentioned above, the annual Best Value conference in Arizona was attended.

In theory the BVP/PIPS process makes the suppliers accountable for liabilities they can manage, it utilizes the expertise of suppliers, it preplans and prepares the players for risks (foreseen by the experts) and it ascertains the owner’s budget and planning. (See Kashiwagi 2010 in this Special Issue)

As the dominant culture in the construction industry in general and at BN specific is “seeing is believing,” two test projects were initiated on the buy-side of the BN organization and the mentioned project on the sell side (prefab concrete factory) was monitored. Packed with the experiences of these three projects a procurement conference for the Ballast Nedam organization was organized within three-month time of the Arizona conference, sharing the experiences gathered so far.

BVP/PIPS Projects

Up to the time of this paper, Ballast Nedam completed the execution of six projects and has one project in preparation. Table 1 lists the projects executed so far. For each of these projects a description will be given, adaptations to BVP/PIPS done are described and the main issues confronted in applying BVP/PIPS are discussed.

A 7th project is going to start in September 2010; a passenger bridge over a highway for the international Floriade in Venlo 2011 will be build (€ 1.000.000).

BN started off with a straight forward kind of Best Value Procurement implementation (see Case 1). The PIPA system (Kashiwagi, 2008, BVP) was followed strictly and not surprisingly things worked out well. Convinced by the strength and simplicity of the process, experiments with the application of BVP/PIPS were introduced thereafter. The following adaptations were tried in the different projects:

1. Replacement of the “planning” criteria in PIPS for other business critical topics.
2. Multiple demands are packed in one single BVP/PIPS approach
3. Adaptation of the scoring weights and criteria
4. A cross-project indirect purchasing initiative, leading up to a IDIQ contract
5. A multi-vendor selection (best of the rest)

These “alterations” (some minor, a couple somewhat more major) will be discussed further in the projects concerning. These projects are described in the remainder of this paper.
Table 1

| Project                                      | Budget            | Invited | Start       | Finish               | Result                                                                 |
|----------------------------------------------|-------------------|---------|-------------|----------------------|------------------------------------------------------------------------|
| 1 Noise reduction screen along railway       | € 312,500         | 13      | May 2008    | October 2008         | On time, within budget, no complaints                                  |
| 2 Metal piles                                | tbd               | 3       | May 2008    | Abandoned in June 2008| Commodity item, highly dependent on world market developments, therefore found not suitable |
| 3 Decorative prefab screen along railway     | € 700,000         | 14      | September 2008 | Abandoned. Project execution postponed till 2010 | Continuous changing demands and uncertainties towards suppliers true capabilities |
| 4 Fuels for cars and machinery               | App. € 8 million for 2010 | 6       | June 2009   | October 2009         | 2 best value suppliers selected for 3 year IDIQ contract               |
| 5 Prefab concrete paving stones              | Est. € 6 million +, for 2010 | 12      | January 2010 | June 2010            | 2 best value suppliers selected for 3 year IDIQ contract               |
| 6 Wholesalers for hardware and tooling       | App. € 6 million for 2010 | 5       | January 2010 | June 2010            | 3 best value suppliers selected for 3 year IDIQ contract               |

Project 1: Noise reduction screen along railway

The first BVP/PIPS project undertaken in BN concerned the fabrication and installation of a noise reduction screen along a railway track as part of a bigger project being executed. The screen consisted of a metal frame holding rectangular sheets of glass measuring up in total to 75 meters in length and 3.36 meters in heights. A rough sketch of the screen existed, but the detail engineering still had to be done. The calculated budget was a “precise” figure of € 312,500.

In looking for possible suppliers fourteen suppliers were identified, thirteen were invited, of which ten showed up at the BVP training. After the training sessions eight suppliers said they were going to make a bid. Finally, four suppliers handed in a proposal.

Among the bidders, only one did not work for Ballast Nedam during the last twelve years. This subcontractor, who considered himself a high performer, liked the process of BVP/PIPS and decided to join the process.

Interestingly enough, it was this supplier that ended up having the best price, the best RAVA plan, the best schedule and had the best interview of all suppliers. There was dominant information that this supplier best suited the project.

A unique proposition of this supplier was the prefabrication of the elements instead of constructing at the construction site. This led to a faster construction time and thus less downtime.
of the railway track. None of the parties involved, including BN, had come up with this idea. Logically, this subcontractor was chosen to perform the work.

Although the project manager was educated in BVP and was part of the decision making unit and therefore involved in the whole process, it turned out to be quite difficult to let go of old habits and have “confidence” in the capabilities of the supplier. Being used to directing suppliers during the execution, the project manager started wanting to know all kind of details and asking all kind of questions concerning the performances to be made by the supplier. This “C-type” kind of behavior is very common among project leaders in the construction industry (Kashiwagi, 2008; Ch 2). “Luckily,” other supplier problems arose on the project which needed attention. Having put in quite some effort in this supplier already, the project leader had to decide to “let go” and rely on the weekly reports. This turned out very well, as the supplier was able to perform his duties as promised without interruptions.

One issue that arose was the variation in distance of the stamps on which the noise reductions screen was to be placed. As its occurrence was foreseen by the supplier, corrections were made in time and execution could go as planned.

This part of the project was finished on-time, on budget and as planned in contradiction to a lot of the other activities performed at this project. This result supported the idea that application of BVP/PIPS has the potential to cut down on failure costs.

### Project 2: Metal Piles

The BN “foundation technique” company is in frequent need for metal tubular piles. As these piles differ in length, width and wall-thickness, no standard up-front purchase can be done. When needed, an offer is requested from the small circle of four producers and two brokers found internationally. The purchase done is the mere buy of the pile. If situated in e.g. Finland, the BN foundation technique company will take care of all the necessary activities to get the pile to their own project. The purchase decision is therefore solely made on the price level offered and time to availability.

This price level is influenced by the purchase price of the metal sheets and the fabrication method of the supplier. However, differences in production methods do not discriminate in product performance or appearance. Quality issues are therefore no issue. There are no other real value adding activities done by the suppliers (as perceived by the buyer). Product related services as shipping, clearance, etc. are all taking care of by BN itself.

This purchase situation was found to be unsuitable for a BVP/PIPS approach, because of the following reasons:

- There was a clear specification to work from.
- A metal pile at the lowest price was bought (supplier’s technical expertise is in the price of the product).
- There were no risks or liabilities to manage.
- Risks were to be managed by the buyer.
Within the BN group there was the perception that the handling of the metal piles (once they come from the producing company) can be better handled by BN than by the producer. Metal piles as purchased by BN at this moment have thus the characteristics of a pure commodity.

**Project 3: Decorative prefab screen along railway**

This project resembled the first BVP/PIPS project done at BN. It concerned the fabrication and application of glass fiber enforced concrete elements to a ground containing wall towards a railway station. Stretching over a surface of approximately 1400 square meters, 700 elements consisting of ten different patterns had to be placed in four months time. A penalty was due if the delivery time was not met. The calculated budget was €600,000.

After a delay of ten weeks and two months of preparation, three glass fiber enforced concrete suppliers and twelve prefab concrete suppliers had been identified and invited to the educational meeting in January 2009. Within a week of this meeting, twelve cancellations came in from the prefab concrete suppliers as they, without an exception, were not willing to take the application of the elements at hand. One of the remaining suppliers turned out to be more of a project management agency with experience in cooperating with producers in this field and delivering end products. This company teamed up with one of the other invitees of the meeting (a coalition). The third supplier honorably declined, stating that the budget was not sufficient by far, as he had calculated for another contractor before. In the end two suppliers remained.

During the four weeks in which the suppliers worked out their RAVA-plans, the architect initiated the first, of what later turned out to be a series, of alterations to the design. Both suppliers were persuaded to hand in a RAVA plan and make up a budget based on the initial demand. The budgets and timelines turned out to be insufficient in comparison to the initial budget.

New alterations kept coming in, and proposed improvements by BN and the potential suppliers were laid aside by the client or its representatives, therefore making it difficult to meet budget and timeline restraints.

The resulting environment in March 2009 included:

- Due to inadequate research by the architect, there were unrealistic expectations towards product appearance, timelines and costs.
- Suppliers said they were unable to make the requested “product specifications.”
- There was an inability to confront the client with the consequences for the budget and timeline changes. Bound by the contract, the proposal to client stood and no excuses were accepted.
- The mystics of calculations had led to unrealistic expectations towards suppliers proposals.
- There was a collision of new and old thinking (more management) between project team and management.
- There was no clear distinction between supplier candidates.

The many uncertainties made it impossible for anyone to rise above the field. Because of this turbulence surrounding the project team, and it being only the second time running this system, the project team did not feel comfortable in bringing it to an end. The BVP/PIPS system was abandoned.

Having taken on this project, the project team had to bring the work to a (good) end. Realizing the status of the vendor community, some management, direction, and control was appropriate.

In looking for alternative solutions with suppliers, foreign partners were found. They finally were able to offer the product demanded at a lower price and shorter timeline.

With the delay of several months, the execution of the application of the decorative elements finally began in the first quarter of 2010 for approximately €700,000.

**Lessons Learned**

1. In the preparation phase it is important to do substantial market research. Good market scanning in order to discover suitable suppliers (who can execute the project well) can be time consuming. It is however very necessary for the quality of the remainder of the process. This lesson is not unique for procuring with BVP/PIPS.

2. In selecting suppliers for the kick-off meeting Ballast Nedam was “generous” in its invitations. BVP/PIPS guidelines propose to minimize buyer decision making, and allow the "expert" vendors to make the decision themselves (whether they consider themselves suitable for the job). If the majority of the vendors are blind and lack expertise, the client may come to the realization that the level of the vendor community as a whole is low, and may have to do some management, direction, and control.

3. It takes skilful suppliers as well as a skilful client to run a BVP/PIPS process. Adhering strictly to the BVP/PIPS guidelines – both ways: to supplier and client - requires best value project managers who have been trained in the BVP/PIPS and the accompanying Information Measurement Theory (IMT).

**Project 4: Fuels for cars and machinery**

In the midst of 2009, BN started preparing for a tender to have its needs for fuels fulfilled. At that time there were also two business opportunities of current interest for BN, where fuels or the fuel distributing companies played a role. It was decided to have a BVP/PIPS approach where multiple requirements could be packaged and presented to the market to find the best values that can be procured.

The need for fuels for BN is twofold: fuels for lease cars and fuels for the project equipment. The BN department “lease management” has approximately 1800 fuel-cards under its management. All together some four million liters of fuels are taken in yearly at various stations all over the country and are administrated through these cards. The fuel consumption is periodically billed to the different project accounts.
There is also a need for fuels (gasoline) at the project sites for “rolling” and non-rolling equipment such as generators, cranes and bulldozers. For non-rolling equipment, the gasoline is distributed to the sites in tanks ranging from 1,000 to 5,000 liters. The rolling equipment, if allowed on public roads, has the ability to either take in the fuel at a home base station - of which two exist within BN - or at the project site. Some 2.5 million liters are consumed through the home bases and another 2.5 million is taken in at the project sites.

Concerning the business opportunities present, one consisted of a bus company tendering its new depots of which the choice for a location, the design and the operational management was an integral part. Ideas and figures for the yearly distribution of some 18 million liters of fuels had to come up to the table therefore.

The other opportunity concerns a new business line BN is pursuing: building and exploiting compressed natural gas stations (CNG). This line of business is operated through the company’s label CNG-net. Filling-stations are realized for (public) transport companies as well as placed at existing fuel stations for common use. For the realization of the latter, BN is in need of the favor of the tank station owners, being either a dealer or a fuel company.

The traditional approach of splitting up the demand requires decision making, decisions that would not be as effective as asking the expert vendors to make the decision. Optimization of the supply chain is caused by minimized decision making. If there needs to be a decision, the expert should be making the decision. It is better for the supply side to make the decision of who is going to offer what.

In total eight supplies were invited to the tender of which five handed in an offer. One of them however made two separate offers through two of its business lines which are set apart in the company (company A and D in Table 2). An overview of the proposals received and their relative positions, based on the outcome of the scoring matrix used in the BVP/PIPS process, is presented in Table 2.

Table 2

| Suppliers > Demand Ú | A | B | C | D | E | F |
|----------------------|---|---|---|---|---|---|
| **Lease cars**       |   |   |   |   |   |   |
| Car fuels            | - | 4 | 2 | 1 | 5 | 3 |
| **Industrial fuels** |   |   |   |   |   |   |
| Projects             | 1 | 2 | - | - | 4 | 3 |
| Homebase             | 1 | 2 | - | - | 4 | 3 |
| Homebase + projects  | 1 | 2 | - | - | 4 | 3 |
| Bus Depot            | 1 | 2 | - | - | 4 | 3 |
| **Total industrial** | 1 | 2 | - | - | 4 | 3 |
From Table 2 it becomes clear that no synergy exists from combining car fuels with “industrial fuels”. One dominant supplier is present in all separate demands for the industrial requirements and the choice to make is evident. It was decided that supplier A would get the job for supplying the industrial fuels.

For car fuels, supplier D looked like the winner. However, the lack in true risks and a competitive advantages among the suppliers, made this purchase more of a commodity item and therefore price became a bigger issue in weighing the decision. Besides, the participation in the CNG-net “adventure” has not been taken into account in this outcome yet.

Scoring Weights and Criteria vs. Pricing

Looking at the scoring matrix as shown in Table 3, one notices there was a large discrepancy between the scoring of the RAVA plan and the scoring of the interview for supplier C. The supplier turned out to be very knowledgeable in the interviews, but failed to document it in the written risk submittals. This, amongst others, made the BN project team feel uncomfortable with the distribution of the weights and the scoring given. Had dominant information done the guidance to the scoring?

The price difference was felt to be of a much greater importance for the organization and the past performance was felt to be of little importance.

Changing and shifting these weights to show more of their importance to the organization (e.g. 30% on price instead of 25%), did not change the outcome of the process however, as can be seen in the “score without CNG” ranking in table 2.

In order to valuate CNG-cooperation, it would have been easiest to have some kind of financial figure on what CNG was going to bring BN. This could have been used in bringing down the budget calculation. This was not the case, however. This figure depends on too many variables to take into account to calculate.

In the end, money made the difference: the pricing of fuels. In combination with the potential earnings of CNG (“extra weight” to this criterion), this made the choice even easier as the cheapest provider also was willing to pursue this opportunity in further depth. Supplier C was chosen above supplier D in all weights and scoring irrespective.

Half a year further in operating together, things have run smoothly from the beginning with supplier C. This supports the BVP process selection.

Lessons Learned

1. After having scored and evaluated the propositions, a score automatically stands out in the scoring matrix. The fact that the project team thought price had not been weighted enough in the comparison, denotes the fact that the scoring process had not been prepared sufficiently. The team only realized after seeing the results of the scoring matrix that price had not been given enough weight. One can keep shifting the weights till the
desired outcome appears. But the lesson learned is that one should keep looking for dominance in performance. If not there, then price is the separator. Suppliers must be instructed how to deal with the different demands in their propositions. In this case the BN team got one RAVA plan for the total proposition from one supplier and four RAVA plans for the specific demands from another supplier. The question arisen is how to compare the one with the four? Based on the current experience the answer would be four times.

2. It might be wise to define the key persons who need to come to the interviews. In this case, this decision was left to the suppliers. The result was a range of employees with different functions and different levels in the hierarchy attending.

Table 3

| Overall scoring matrix on BVP/PIPS for car fuel distributors w/CNG | B     | C     | D     | E     | F     |
|--------------------------------------------------------------------|-------|-------|-------|-------|-------|
| % price difference                                                 | -2.36%| 0.00% | -3.58%| -4.01%| -3.83%|
| Past Performance                                                   | 7.51  | 7.57  | 8.14  | 8.08  | 8.08  |
| RAVA                                                               | 6.65  | 5.10  | 6.90  | 4.18  | 5.69  |
| Interviews                                                         | 5.00  | 7.50  | 7.40  | 6.20  | 7.00  |
| CNG-net                                                            | 5.00  | 5.00  | -     | -     | -     |
| Score BVP/PIPS standard weight                                     | 87.36 | 92.44 | 93.74 | 78.85 | 87.57 |
| 25% price, 15% PP, 25% RAVA, 30% interview, 5% CNG                |       |       |       |       |       |
| Ranking                                                            | 4     | 2     | 1     | 5     | 3     |
| Score without CNG                                                  | 87.24 | 92.44 | 98.56 | 83.66 | 92.39 |
| 30% price, 15% PP, 25% RAVA, 30% interview                         |       |       |       |       |       |
| Ranking                                                            | 4     | 2     | 1     | 5     | 3     |
| Score alternative weights                                          | 88.02 | 93.13 | 88.56 | 73.73 | 82.46 |
| 30% price, 5% PP, 25% RAVA, 30% interview, 10% CNG                 |       |       |       |       |       |
| Ranking                                                            | 3     | 1     | 2     | 5     | 4     |

**Project 5: Prefab concrete paving stones**

Ballast Nedam procures a great deal of pavement stones each year. In the last three years, BN procured € 6 million on the average from some 25 different suppliers. In total these suppliers send BN 3,000 invoices. A rough estimation of € 50 per invoice implicates high transaction costs.

After having evaluated the product group strategy within BN, the goal set was:

- To minimize the number of suppliers and their invoices.
- Make an IDIQ agreement for three years.
- Make contract(s) for concrete products and services associated with the following: Tiles, Stone, Curbs and Specials.
- Project details are to be exchanged on a project basis and final pricing is based on measures agreed.
- Look for a Corporation who acts Socially Responsible. A carbon footprint has to be handed in every year as part of this responsibility.

In order to spread the BVP/PIPS philosophy across the BN organization a new cross-organization project team was formed, comprising of seven people with four different functions. The first step in the BVP/PIPS process was to educate the people involved: internally and externally. Based on the questions received, the philosophy turns out to be quite easy to understand. Supplier evaluation showed “this innovative way of purchasing gives suppliers a chance to profile themselves in a most suitable way” as one supplier replied.

In this case the planning criterion was substituted with a CSR criterion (corporate social responsibility). Suppliers were asked to hand in their vision and actions to support this topic in a maximum of one page. The scoring was done according the BVP/PIPS way of working and stayed unchanged at five percent.

In assessing the “risk assessment and value adding plans” from suppliers, project members did not find it difficult to line-up the plans from “good” to “less good”. They did find it difficult however to point out the facts that made them order the suppliers the way they did. In Figure 1 the scores of the individual participants is shown. Based on the spread of scores, it can be noted that no real consensus exists.

| Identification of risks | Quality of risk minimization proposal | Quality value added activities | Overall value of RAVA plans |
|------------------------|-------------------------------------|-------------------------------|-----------------------------|
| Average | min | max | spread | Average | min | max | spread | Average | min | max | spread | Average | min | max | spread |
| A | 4.8 | 2 | 6 | 4 | 1.64 | 5.2 | 3 | 7 | 4 | 1.48 | 5.2 | 3 | 7 | 4 | 1.48 |
| B | 7 | 3 | 9 | 6 | 2.35 | 7 | 3 | 9 | 6 | 2.35 | 6.8 | 3 | 9 | 6 | 2.39 |
| C | 6.6 | 6 | 7 | 1 | 0.55 | 6.6 | 6 | 7 | 1 | 0.55 | 6.6 | 6 | 7 | 1 | 0.55 |
| D | 4.2 | 2 | 6 | 4 | 1.48 | 4.2 | 2 | 6 | 4 | 1.48 | 2.8 | 1 | 4 | 3 | 1.19 |
| E | 4.4 | 2 | 7 | 5 | 1.95 | 4.8 | 3 | 7 | 4 | 1.78 | 3.8 | 2 | 6 | 4 | 1.48 |

Figure 1. Scoring matrix of the RAVA plans for prefab concrete stones

The weights were adapted. Price was weighted forty percent, PP ten percent, RAVA twenty percent, Interview twenty five percent and CSR five percent. In the end two suppliers were chosen. They proved to be able to fulfill the delivery of these products on a national basis for a fair price. The best value supplier received the second best price of the two and the next ranking supplier had submitted the best price proposition.

In applying BVP/PIPS to non-constructive purchasing the first question arisen in setting up for the weekly reports is the frequency. Another question is “If there is nothing to report, do I have to report this?” The team decided, along the lines of the methodology, to indeed have the “weekly” reporting in place, even if there was “nothing to report”. Still, the team felt that for IDIQ contracts weekly reporting does not sound necessary and changed it to monthly.

A further difficulty ran into is the “truthfulness” of the “weekly” reports; how to be sure that all the issues that played up are reported. However, it was identified that these are issues that frequently are resolved quickly and are most of the time not critical.
After having finalized the pre-award phase cooperation started as from January 1, 2010, and has been successful so far.

**Lessons Learned**

1. Discussions to get to consensus tend to take quite some time. The group tends to find the “mean” instead of the facts. This causes two problems in the next steps:
   a. Drawing up interview questions for suppliers and assessing them;
   b. Pointing out to a supplier (and your organisation) why she has or has not been given the full score.
   c. “If you can’t name the difference, then their probably is no discriminative difference” turns out to be a wise and handy policy to stick to.
2. The interview must be used to find evidence in the expectations arisen from the RAVA plans. In not doing so the interviews turn out to fulfil a part of their own. More so, known suppliers to the project team members turned out to have gotten better scores, then unknown suppliers. The evaluation of the interview scores brought this to light.
3. It is difficult in getting the team to understand (and having the discipline in) doing the “weekly” reporting literally every week (or month).

**Project 6: Wholesalers for hardware and tooling**

In 2006 a project was started to bring down the number of hardware suppliers from some eighty companies to three. For political reasons, five suppliers were chosen in the end. The decision was made at that time to bring down these five to three in three years time. In June 2009 these five suppliers were invited to participate in a BVP/PIPS process for this reason.

The turnover to split among the three suppliers is about € 6 million. The exact demand for hardware for the coming years can only be estimated based on the numbers from the past. In order to get to some kind of budget, suppliers were asked to calculate a baseline, based upon the price for a shopping basket, filled with 50 articles which are marked as runners by the current suppliers.

The outcome of these calculations was found to be “surprising” to say the least. The calculation of one supplier was far below the rest and huge differences were noted among the price setting of common goods among suppliers. Table 4 shows these differences for different baselines calculated.

Besides that, certain items, however carefully defined, turned out to be still open for interpretation. In table 4 one item, were a price difference of more than 200 percent exists, is shown as an example. These baselines still all went in the final rating sheet in order to assess its effect on the final outcome. It turned out that it didn’t have an effect on the ranking.

The suppliers themselves also found the shopping basket not to be indicative for the efficiency of their process. They also confessed that this way of comparing is common practice among
contractors. BN turned out to be a positive exception to this rule, in a way that BN only asked for 50 items, where 1000 items are more common to be priced.

Other measures agreed on have a much greater impact on costs occurred, as standardization of items and brands to be delivered and it is this line of reasoning in which the final agreements was made up.

An important observation in each of the projects was that suppliers turn out to have quite some difficulty in naming their competitive advantage. Also the risks, with which they come up, often turn out to be marketing related issues, stressing their advantage over competitors, rather than being risks for client. In Table 5, only two are mentioned which BN encountered in this BVP.

Table 4

| Product | A          | B            | C          | D          | E          |
|---------|------------|--------------|------------|------------|------------|
| M-TORK ADVANCED WIPER 415 (paper towels) | € 96,48 | € 143,64 | € 143,52 | € 291,60 | € 279,07 |
| Baseline price total product list | 100% | 121% | 130% | 132% | 142% |
| Baseline total product list exclusive rarities in product offering | 100% | 135% | 140% | 134% | 141% |
| Baseline total product list exclusive all unexplained rarities | 100% | 192% | 203% | 195% | 203% |
| Baseline exclusive all excessive differences (> 100%) | 100% | 118% | 120% | 126% | 120% |

Table 5

| Supplier 1, risk 1 | Financial instability because of economic developments |
|--------------------|-------------------------------------------------------|
| Solution | Because we have turnover from more than 10.000 customers, we are not dependant on one or more major clients. Besides that, we have a large credit facility, which is only minimally used. Therefore we are able to guarantee you continuity. |

| Supplier 2, risk 9 | Solvability of supplying organization |
|--------------------|--------------------------------------|
| Solution | All of our transactions are covered by an insurance company. Therefore all our deliveries are guaranteed. |

Several suppliers stated that they found the exercise confronting in a positive way. A statement from one of the suppliers in a project: “We are so convinced of our strength, but in assessing these towards ‘value added items’ and unique risks we eventually did not get it on paper very well. It made us involve more people from different disciplines in our organization. This had two positive effects for us: 1. The feeling that we all put an effort in, getting in a client. 2. We got to leverage our knowledge among ourselves. Some people from sales for instance, were not aware of the information exchange possibilities between our organization and of clients. Right the very next day, one of the salesmen got in a deal, because of stressing this fact to a client.”
In Table 6 two examples are shown of an item that one supplier sees as his competitive advantage and another puts up as risk. This shows the reason to take the Risk Assessment part and Value Added part of the RAVA plan together when rating them (see also the Veenendaal & Witteveen in this Special Issue).

During the pre-award phase, a great amount of time was invested to explain to the suppliers what was expected from them. As the service in this commodity group is important, the risk confronted with is very small as their respective RAVA plans showed. Discussion on this topic was difficult as they were not understood.

The monthly reports turned out to be of great value to both sides for spotting issues with a frequent occurrence. Returned items, for instance, were noted as a risk and therefore reported. In looking for ways to minimize them, the supplier started to make inventory of the reasons for their return. It turned out that “wrong ordering” and “wrong delivery” were major reasons. Now these topics are addressed. These issues are discussed every three month in an improvement meeting, thus making the cooperation stronger through time.

Table 6

| Discriminating Factors between Hardware Suppliers |
|-----------------------------------------------|
| **Value proposition, Supplier 1**            |
| Supplier 1, Value Added Item 2                | Emergency deliveries in case of calamities possible within 2 hours throughout the Netherlands. |
| Impact on costs in Euro’s                     | No addition costs at a yearly turnover of 500k. Savings approximately €100 per express order. |
| Impact on scheme in days                      | N.a. |
| **Identified risk, Supplier 2**               |
| Supplier 2, Risk 1                            | Downfall in productivity because of missing tools and/or materials. |
| Solution                                      | Because of our nationwide network, items can easily be picked up at nearby stores. We are able to deliver in 24 hours and if necessary we can do express deliveries by ourselves or by courier service. |

Lessons learned

1. Baseline calculations must be confronted with care and thought over carefully
2. Suppliers have difficulties in writing RAVA plans and deciding what to write in which part of the RAVA plan. Heavy education is needed.
3. Measuring performance is relevant

Supplier evaluations from the application of BVP/PIPS at BN

The application of BVP/PIPS was not only new to the Ballast Nedam organization; it was also the first time the suppliers / subcontractors got to know BVP/PIPS.
Supplier evaluations produced the following:

1. The educational meeting where all suppliers were invited sit together felt strange, but transparent at the same time.
2. Possibility to differentiate is a plus for suppliers.
3. Suppliers are relieved that the rating / award is made on a weighted average, where price is only one element.
4. Suppliers experienced the process as very transparent.
5. CSR weight is felt as a relative low score in the total evaluating criteria. This is a way to differentiate one another.
6. The supplier reduction as a “must” is found too much of goal of its own. It must be the outcome of the process.
7. “Promising process of which we hope to encounter more in the future.”

Embedding BVP/PIPS in BN

The BN organization is not used to working in cross-organizational multifunctional project teams for purchasing activities. The time claimed from the different participants from a representative mix out of the organization is always a topic. Stressing the need for a widely supported solution by different companies and functions, people were reluctantly made available. The multifunctional approach asks for understanding and commitment from many different players, with different backgrounds. The successful completion and adherence to the BVP/PIPS philosophy asks for intense guidance during the whole process, even during the post-award phase (start of the weekly reports).

The time spent up to the pre-award stage is quite an investment for non-purchasing personnel. However, for purchasing personnel the time spent so far is a fraction of what a “normal tender” would cost them. The experience of the participants is overwhelmingly positive.

At the pre-award stage the participants are halfway through the process, where in a normal scenario, the participants have already started execution at this point. This observation matches the observation of Rijkswaterstaat as described in the paper of Van de Rijt et al in this Special Issue.

When starting off it seems to be very difficult for a project-leader to really put his confidence in the hands of the supplier and “just” manage the risks stated in the weekly report. “I’m pleased that the talks are over, then we can start work,” as one of the project leaders said after having finished the pre-award phase. An observation that can be made is that in the beginning they tend to mingle very much in the suppliers responsibilities. Over time, as they find out that is not necessary, they seem to step back. It is a matter of a new experience and it takes time to change paradigms...

Hoping for an eye-opening experience for the participants at the purchasing conference at BN, the internal conference resulted in just one other concrete request for application. Still strengthened by the success of the one project that was already running and believing in its possibilities the core group set out to find other purchasing project to begin with. In total seven projects have been initiated, of which six have been finished (as of this writing).
It turns out to be quite difficult for people to imagine the gain of this purchasing methodology to their projects. Besides the imagination they need to lose the engravings of their past experience. An experience where they think they are in control by specifying the details of their demand, making it possible for them to compare and choose the best bid based on the lowest price.

There is a dominant idea around in the construction industry that the success of one project does not necessarily encompass the success for the next project. All participants need to be convinced, every project, all over again. This makes it time consuming and a long path to travel before this will be the dominant behavior in an organization.

Purchasing within BN also get requests from within the BN sales organization to aid in commercial propositions for clients who also embraced this kind of approach. This helps in getting BVP/PIPS established in the organization.

Conclusions

Invented for realizing construction projects in time, on budget and according to the customers’ demands, the BPV/PIPS method has proved itself to be a better procurement approach toward any purchase rather than the traditional tendering. Better, because it makes use of the expertise available and sets accountability in a logical way.

- It minimizes decision making by the client organization (Ballast Nedam).
- It forces the vendors to differentiate themselves in terms of dominant value.
- It transfers the risk and responsibility of performing to the vendors.
- It keeps the vendors accountable.
- The contract becomes a performance based contract instead of a specified contract using minimum standards.
- It assumes that the vendor is an expert, who can pre-plan and manage and minimize the risk that they do not control.
- It minimizes the need of the buyer/client to have technical expertise.
- It increases the value and performance of the service in terms of cost, time, quality, and customer satisfaction.

The questions raised in this paper were:
1. Can BVP/PIPS help in bringing down failure cost?
2. Is BVP/PIPS applicable to any kind of purchasing?

The only real evidence in answer to the first question can be found in case 1, the noise reduction screen. BVP/PIPS has the potential to get to more feasible plans by bringing suppliers’ skills, experience and appropriate knowledge embedded in their proposition Therefore they are more committed and can be held accountable. This tackles two of the mean reasons mentioned for the existence of failure costs.
On question number two, the cases described in this paper show that BVP/PIPS is very well applicable beyond purchases of subcontractors for construction projects, e.g. for procurement of concrete pavement stones and hardware tooling.

The BVP/PIPS process was found not to be applicable for pure commodity buying, where the client (Ballast Nedam in this case) did not “allow” the vendors to be differentiated or the vendors were not able to differentiate themselves (car fuels). If the client does not want the vendors to minimize the risk, the BVP/PIPS process is of little use. This has less to do with the BVP/PIPS process as it has to do with the perception of the client side. The cases show that BVP/PIPS can work in project-environments (e.g. noise reduction screen) as well as in IDIQ contracts (e.g. hardware tooling).

One of the lessons learned in the six cases, is that it takes two to tango. BVP/PIPS competent teams are a prerequisite on both client side and vendor side. A knowledgeable supply chain is critical to the success. In some areas these are difficult to find. The case of the glass fiber enforced decorative prefab wall made this evident. Enough time must therefore be invested in market research to find potential competent suppliers (also because the experience is that the majority of suppliers invited tend not to participate in the BVP/PIPS process for different reasons) and then resources must be used to educate, educate and educate.

From a purchasing point of view the BVP/PIPS attracts suppliers who are experienced and prepared for starting projects with BN. BVP/PIPS does take some time from the Ballast Nedam organization. This is an investment the organization must get used to; the gain is so much greater in time, quality, risks and integral costs and having fewer disruptions in the execution phase.

The cases shown in this paper dealt with:
- Alteration of the “planning” criterion in BVP/PIPS for other business critical topics.
- Multiple demands packed in one single BVP/PIPS approach.
- Adaptation of the scoring weights and criteria.
- A cross-project indirect purchasing initiative, leading up to a IDIQ contract.
- A multi-vendor selection (best of the rest).

These issues were found to have a minimal impact. The BVP/PIPS process still worked. It led to:
- Increased transparency.
- Allowed participants in the supply chain to participate.
- Minimized the need for technical expertise of Ballast Nedam.
- Measured the vendor in terms of performance and price.
- Transferred the risk and accountability to the vendor.

There still is a long way to go, before BVP/PIPS is going to be the dominant approach for purchasing within Ballast Nedam. It still takes great time to get new projects, because people have a hard time to really understand and have to lose their old way of thinking. Clients, who demand this kind of offering from us, help in pursuing this kind of purchasing in the supply chain.
For the purchasing of cross-organizational needs of Ballast Nedam, BVP/PIPS is going to be the method used from now on.

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