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NEW ROAD MAINTENANCE MODEL IN FINLAND – 2014 PILOT PROJECT

Pekka Pakkala[1], Katja Levola[2]
1 Ramboll Finland Oy, Finland
2 Pirkanmaa Centre for Economic Development, Transport and the Environment, Finland

Abstract

Finland is testing a new model for Performance Based Maintenance Contracting (PBMC) for roads in 2014. In Finland, PBMC have been used for about thirteen years and the market is very competitive, driven by lower costs, and quality needs improvement. Continued pressure towards efficiency and reduced costs are approaching the limits and a new model is needed to increase the quality and provide incentives for contractors. An internal road agency steering group was assigned the task to develop a new model for maintenance that would be appropriate for Finland. The “alliance model” has been tested in some countries, but there are limited results and the alliance model may not be appropriate for Finland. This new model is titled “Program Managed Performance-Based Maintenance Contracts” and has similarities to the alliance model, but is much simpler. Since the model is presently under development, the objective of the paper is to discuss the development, procurement, and preliminary findings. The tendering of this model is in early 2014 and details are not known at the time of the writing this abstract, but preliminary finding will be available for the conference. The new model introduces possibilities for improved quality, services, and provides a better opportunity for risk sharing.

Keywords: Performance Based Maintenance Contracts (PBMC), outsourcing, maintenance and contracting

1 Background Information

The Finnish Transport Agency (FTA) began operations at the beginning of 2010, where three important modes of transport, such as, road, rail and waterways were restructured into one transport agency. Previously, the road administration client was known as the Finnish Road Administration (Finnra), which managed the state public road network, but now FTA includes road, rail and waterways. FTA is responsible for maintaining and developing the transport systems as a whole in cooperation with other key stakeholders and its goal is to promote productivity and innovations in the transport sector. FTA is also responsible mobility of the transport system’s network, environmental stewardship and responsible for operational steering of nine Centres for Economic Development, Transport and the Environment (known as the ELY Centres).

The Centres for Economic Development, Transport and the Environment were partially composed from the nine Finnish Road Administration regional offices that were also created during the reorganization of FTA in 2010. These nine ELY Centers have transport responsibility, which includes road transport mobility and safety functions on behalf of FTA’s steering goals. In addition, the ELY Centers are responsible for maintenance and functionality of the road transport assets, systems, and promote safety and mobility of the road network. These ELY

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Stjepan Lakušić – EDITOR

Organizer
University of Zagreb
Faculty of Civil Engineering
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Centers basically act as the "road manager" on behalf of FTA and is responsible for the procurement of capital investment projects and all outsourced maintenance contracts.

1.1 FTA and ELY-Centres routine maintenance contracts

In Finland, safety, mobility and availability of the road network is assured through meticulous maintenance. Road maintenance services are publicly tendered in the form of area-based contracts and currently there are 81 area-based contracts using the Performance Based Maintenance Contracts (PBMC) concept. The contractors preforming the road maintenance services are responsible to maintain the services according to the client's Levels of Service (LOS) for their respective road classification. In Finland, winter maintenance operations include snow plowing, prevention of slippery conditions or deicing of roads, repairing unevenness of the road surfaces, and ensuring the visibility of traffic control equipment, such as signs and road markings. In the summertime, the main duties include maintaining the gravel roads, traffic signs, vegetation control, grass and brush cutting, repairing and patching pavement defects, like potholes, and any other surface defects that may cause risks to traffic safety. The contractors are also responsible for continuous monitoring of the road system, availability to on-site tasks, reporting and tracking defects, and assisting authorities/officials when there are emergencies. The present maintenance contracts are shown in Figure 1 and also includes the location of the new pilot project that is being tested in Espoo.

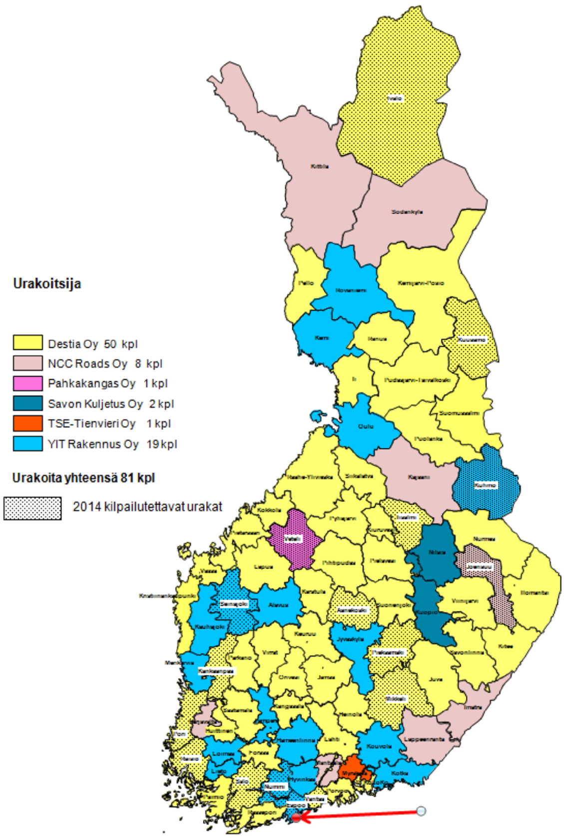

Figure 1 Area Maintenance Contracts in Finland.

2 Program Managed PBMC

The Finnish Transport Agency (FTA) initiated a feasibility study to evaluate the "Program Managed PBMC" model during the end of 2012. An internal working group with the assistance of experts from the infrastructure industry decided and recommended to pilot test the new model. After the feasibility study and preliminary development of the tender documentation, FTA and ELY Centre Uusimaa decided to continue the development of this new model in the fall of 2013. The new model is based upon principles and guidelines from the project management of maintenance contracts, alliance model, traditional routine and periodic maintenance contracts. The new model is termed "Program Managed PBMC" because the routine maintenance services significantly deviate from traditional project manager concepts and maintenance management concepts. A custom-made approach was necessary to achieve many new goals and desires of the client organization. At issue is a totally different management concept, where the procurement contracts are actually tendered and managed by the "contractor". However, the intent and spirit of the public procurement requirements should be observed and honored.

2.1 Client's goals

The new model is more appropriate for demanding and very demanding type maintenance contracts, where flexibility and allowance for variations are prominent, compared with traditional contracts. The model allows for flexibility during the contract period, client change orders can be included in the contract, and the potential for innovations and development. The main goal is to provide services from a road users' perspective and provide flexibility for implementation of these services. The model attempts to balance the risk and promote better teamwork and cooperation between the client and the contractor. The model is quite straightforward and is aligned with the present area maintenance contract models, which have the potential to be adaptable. The result should be less management and quality inspection.

2.2 Structure of the Program Managed PBMC

The provider/contractor (herein called the program coordinator) is responsible for the maintenance services for the area based maintenance contract according to the client's road classification and service levels. The service requirements of the program coordinator include many of the typical routine maintenance services, management and administration services and all related procurement duties.

The program coordinator offers professional and quality services on behalf of the client so that both parties have a common interest and focus for the maintenance services. The program coordinator together with the client should provide an effective implementation method and a cooperative management method that leads the entire maintenance process in a cooperative and open manner. The program coordinator is responsible for the maintenance planning process that needs to be approved and continually modified in a cooperative effort with the client. All purchases (product deliverables, performance, service requisitions and subcontracting) will be competitively tendered regardless of the number of bidders and even those that have provided alternative bidding prices. Maintenance activities are supported in the maintenance plans according to the procurement plans that are done in the name of the program coordinator. The client will nevertheless make final decision and approval.

2.3 Espoo Pilot Project

The area maintenance contract for Espoo is scheduled from 2014-2019 and is chosen as the pilot project for this new model. The new model is procured by Pirkanmaa ELY-Centre on behalf of Uusimaa ELY-Centre and is categorized as a very demanding maintenance contract, which includes the roads in the cities of Espoo, Kauniainen, Kirkkonummi, and outlined parts of Helsinki. The contract includes about 850 km of roads and 150 km of pedestrian and bicycle pathways. Winter road classification for this contract comprises about 130 km of dual lane roads of class 1S and about 200 km of single lane 1S, which includes ramps. The remaining road network is comprised of roads classified as II and III. The Espoo contract area is a highly travelled and often congested road network that is susceptible to disturbances throughout most of the day. Performing maintenance activities on the road network is challenging for the safety of both workers and road users, which requires significant attention and well planned activities and services. Another challenge for the maintenance contractor is the location along the coastal area, because the weather may change rapidly and temperatures fluctuate above and below the freezing point.

3 Procurement process

The procurement process for the pilot project is done in two stages. During the first stage, the official invitation for "expression of interest" was issued during the fall of 2013. The candidates expressing their interest in the project were required to have a turnover of at least €12 million and had previous experience in maintenance works or construction/project management. In addition, they were required to have two of their own staff that had a minimum of two year experience as project managers in routine or periodic maintenance contracts, providing their education, training and experience met the requirements. Also, there was a prequalification limit of five tenders.

All prequalified bidders were sent a preliminary proposal in the beginning of October 2013 and only the preliminary quality portion of the bidding documents were submitted to the client by the end of October 2013. Next, the client explained the initial contract proposal documentation through private individual negotiations for deliberation. These bilateral negotiations were intended to develop the invitation to tender documents, versus official contract negotiations.

The second stage of the procurement process was to gather lessons learned from the bilateral negotiations, finalize the invitation to tender documents and conclude when there is a signed agreement with the winning bidder.

The finalized invitation to tender documents was sent to those offers' participating in the negotiations at the end of January 2014. The proposal due date is planned for April 1, 2014 and the tenders are expected to be evaluated within a week, so that the client can have a signed contract with the award winner by the middle of May 2014.

3.1 Tender Evaluation procedure

The tender evaluation selection criteria established in this pilot project is using a competitive, negotiated method. The main focus of the award is one that is the most overall economically beneficial. The most overall economic beneficial tender is the one receiving the highest score from amongst the bidders. The procedure uses a 1000 point maximum scoring scale and is determined by the following weights of 20% for quality, 10% of key personnel and 70% for price.

The quality assessment category is evaluated by four different selection factors that are composed of the quality plans, program coordinator's procurement expertise, winter maintenance responsiveness, and the program coordinator's training and development. The scores from these four selection factors are multiplied by the appropriate weighting factors to determine the sub-category score and then summed to receive the quality category score.

The key personnel category is determined by the service and organization capability and by the examinations of key personnel. The evaluation includes the service and organizational capabilities and skill levels. The examinations seek to evaluate all the program coordinators, various key personnel expertise, and capabilities relating to the wide range of tasks and working requirements. The scoring of points is accomplished by averaging the total points scored form the tests. The scores from these two selection factors are multiplied by the appropriate weighting factors to determine the sub-category score and then summed to receive the key personnel's category score.

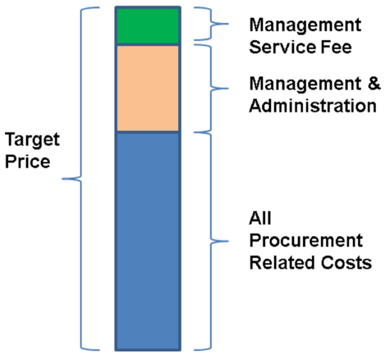

Figure 2 Components of the Target Price

The bid price is the "Target Price", which consists of all procurement related costs and acquisitions, management and administration, as well as the management service fee. The tender with the lowest target price will receive 10 points. The other bidders target price is compared with the lowest bidders target price. The price scores are multiplied by the appropriate weighting factor to determine the price score.

Table 1 Evaluation Scoring System

Category	Selection Factors	Max. poss. score	Weighting Factor	Weighted Score
A1. Quality of the Maintenance Management Plans	A.1.1 Evaluation of management plans, functional descriptions and initial quality points, and depot locations, inventory of accessories	10	9	90
	A.1.2 Program coordinator's procurement and philosophy	10	6	60
	A.1.3 Program coordinator's responsiveness and commitments, as well as management to the weather conditions	10	2	20
	A.1.4 Program coordinator's personnel training and development	10	3	30
	Subtotal of A.1		**20**	**200**
A2. Key Personnel	A.2.1 Service and organizational capacities	10	5	50
	A.2.2 Key Personnel Exams	10	5	50
	Subtotal of A.2		**10**	**100**
B. Bidders Price	B. Target Price	10	70	700
	Subtotal of B		**70**	**700**
Total Score			**100**	**1000**

The fixed management fee includes the program coordinator's general overhead costs, risks and profit margin. Contract management and administrative costs portion includes among other things; contract management and administrative costs, fulfillment of their duties, as well as office and information technology costs. The procurement costs include all related

purchases to fulfill the outcomes of the project requirements and includes; equipment purchases, all related sub-contracting, service contracts, construction and maintenance services and materials, temporary traffic devices and systems, and other related purchases, which are not included in the management or administrative cost portion.
The total score is calculated by a summation of all the points scored for all the sub-categories and the highest score is declared as the winner of the tender. Table 1 shows the details of the scoring system, categories, selection factors and the weights. Figure 2 shows the components that are included of the "Target Price".

3.2 Program Coordinator's Payment Mechanism

The annual target price includes all actual costs defined in the contract, such as management and administration costs, as well as the cost of purchasing. If the cost exceeds the target price, the client will pay the program coordinator 70% of the all costs exceeding the target price up to the guaranteed maximum price.
The guaranteed maximum price is fixed at 10% above the target price and can only be modified during the contract period through client ordered additional work, changes in the construction/maintenance index, external influences that exceed the guaranteed maximum price that are agreed by the client, or changes in the quality service levels. Otherwise, the program coordinator will be responsible for all costs exceeding the guaranteed maximum price.
The program coordinator has the option to transfer the costs exceeding the guaranteed maximum to the following year's procurement cost, providing that the client provides approval. The program coordinator is fully responsible for the prices in the last year of the contract for any costs exceeding the guaranteed maximum price.
Similarly, if the costs are below the target price the client pays the program coordinator an incentive of 30% of the amount below the target price up to a maximum of 250000 euros, in each contract year. If the incentive is exceeded in one year, the amount greater than 250000 euros can be transferred to the following years purchase price reduction. Figure 3 shows an example scenario of the payment mechanism.

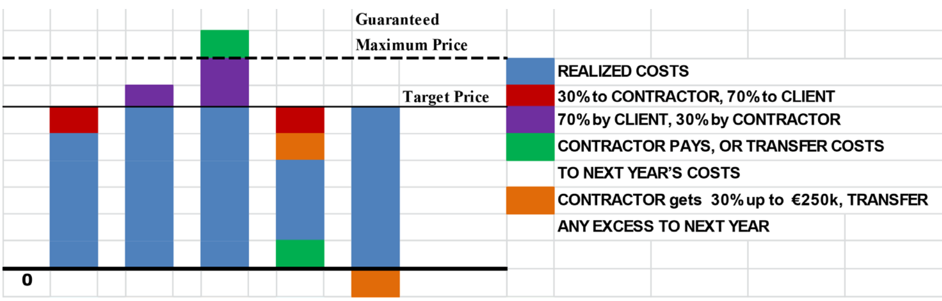

Figure 3 Example of payment possibilities

3.3 Additional potential incentives

There are four additional schemes or possibilities to receive incentives in this model, providing that the target price is not exceeded by the program coordinator. The first possible incentive is from the road user satisfaction and innovation. Traditional PBMC already include this incentive, so that is not new. The results from; the road user satisfaction survey during winter, a special evaluation team for measuring the performance during winter, improved summer services and innovations may receive a maximum incentive of 2% based upon the annual winter maintenance costs.

The other three incentive models have not been used in routine and periodic maintenance contracts. These three incentives are contract related, workers' and road user safety, and observations contributing to safety accidents. In second incentive scheme, the program coordinator may possibly receive an incentive of €15000 every year for providing good maintenance services, providing the program coordinator does not exceed the amount of penalty points in that year. If the program coordinator receives greater than 100 penalty points, then there is no incentive. Penalty points and the incentive calculations are shown below:

- written warning ⇢ 20 penalty points;
- A-Group Disincentive ⇢ 50 penalty points;
- B-Group Disincentive ⇢ 80 penalty points;
- B-Group Disincentive for not performing entire work on class 1 roads during winter ⇢ 100 penalty points;
- disincentive for not performing according to work plan #7 ⇢ 100 penalty points;
- dDisincentive for not performing according to the quality plans, follow-up reporting, and inaccurate data reporting from #8 ⇢ 100 penalty points;
- quantity of non-conformance report reminders are over 50% or equivalent errors in A-Group disincentives ⇢ 100 penalty points.

The incentive scoring structure:

- maximum incentive is 15000 euros, if there are no penalty points;
- 50 penalty points ⇢ incentive of 7500 euros;
- 100 penalty points or more ⇢ no incentive;
- intermediate values for the incentive is calculated using the formula: Incentive = 15000 × (1-b/100), where b is the period accumulated penalty points. The program coordinator is entitled to an incentive, if b ≤ 100.

The third incentive scheme consists of the program coordinator's observations of workers' and traffic safety hazards, deficiencies, problems in the contract area, and deficiencies from other operating companies maintaining other roads. The program coordinator may be entitled to a maximum incentive of €15000 by reporting observations, follow-up activities, new ideas for improvement work, and improved traffic safety measures. The incentive calculations are shown below:

- reporting 100 observations or ideas per year ⇢ an incentive of 15000 euros;
- reporting 50 observations or ideas per year ⇢ an incentive of 5000 euros;
- reporting under 50 observations or ideas per year ⇢ no incentive;
- intermediate values are calculated by linear interpolation.

The final incentive scheme is that the program coordinator may receive an annual maximum incentive of €20000 euros if road traffic accidents in the area contract are explained or resolved in greater than 60% of the occurrences. The incentive calculations are shown below:

- if greater than 60% of traffic accidents are explained ⇢ an incentive of €20000;
- if 30-59% of traffic accidents are explained ⇢ an incentive of €10000;
- if under 30% of traffic accidents are explained ⇢ no incentive;
- intermediate values are calculated by linear interpolation.

4 Discussion and remarks

The tendering phase is presently in process and there are a maximum of five bidders that are preparing their respective tender offers. The Espoo "Program Managed PBMC" pilot project is expected to be awarded in mid-May 2014, after the tenders are evaluated, and it appears that the way forward is proceeding satisfactorily.

The winning contract is expected to be determined in about two months and if all related procurement procedures can be completed in time, the contract can then commence on October 1, 2014. It is hopeful that the procurement model will work in practice, as well as, how the model appears from the development group members' perspective.

5 Conclusions

This paper presents a new model for the maintenance contract development in Finland and offers a potential model for others to consider. The Programed Managed PBMC is a totally new maintenance model that attempts to balance the risks and seeks to improve the quality, compared to the previous Finnish maintenance contracts. Since the procurement process is underway there are no actual results to date and the test of time will reveal if the results from this new model are acceptable. In theory, it appears to be adequate and until there are actual results can there be any valid conclusions.

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