

Suez Water BOOT Project: Case Study

Diaa S. El Monayeri⁽¹⁾ and Mohamed S. Ibrahim⁽²⁾

- (1) Assistant professor, Environmental Eng. Dept., Faculty of Engineering,
Zagazig University, Egypt
- (2) Associate professor, Public Works Dept. Faculty of Engineering,
Ain Shams University, Cairo, Egypt

Abstract

BOOT is the terminology for a model or structure that uses private investment to undertake the infrastructure development that has historically been the preserve of the public sector. The Government of Egypt in developing the new industrial and urban area is seeking for a private sector investment and partnership. One of the successful approach to this partnership is the BOOT approach. In this paper, the BOOT project to supply water to the new industrial area at North-West Suez Gulf area is discussed and the evaluation procedure is presented.

Introduction

Strong urban growth throughout many developing countries coupled with increasing environmental problems have given rise to a new set of market opportunities (Lorrain, 1990). The BOOT approach has in recent years played a growing role in the implementation of industrial and infrastructure projects in both industrialized and developing countries. There is no perfect BOOT models for all infrastructure projects, and the country have to shape the approach to suit its national requirements (UNIDO, 1996). The Government of Egypt (GOE) has given a considerable concern towards the privatization and private sector partnership of the main infrastructure as in the field of electricity, transportation, airports, and in water and wastewater sector. The North-West Suez Gulf Area (NWSGA) is a promising area in the field of industry and world trading. In this area the GOE was obligated to supply the infrastructure to this area to encourage the investment. One of the alternative to build this infrastructure was the Build, Own, Operate and Transfer (BOOT) approach. The question of knowing whether or not the private sector can provide a better service at a better price than the public sector was first clearly raised in France at the beginning of the 17th century (Verin, 1989)

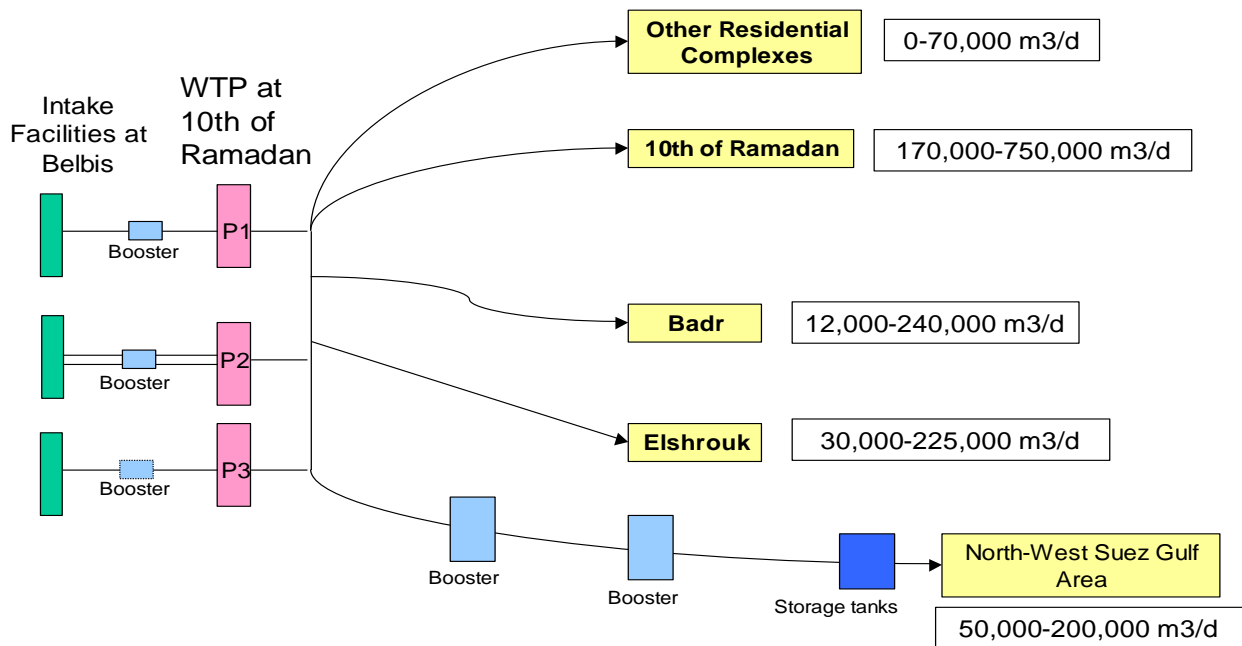
One of the infrastructure projects in this area was the supply of potable water. The first phase of the demand is to supply 200,000 m³/d. This paper demonstrate the project steps, phases of implementation, and the evaluation procedure to rank the bidders.

Project Identification

The supply of water to NWSGA is very essential step in the development of this area. GOE was obligated to supply water to NWSGA to encourage the investment. The GOE planned to give the concession of the water supply to a company and buy the water from the company and then sell the water to the industrial area investors. As NWSGA is a new industrial area, the prediction of this area development is difficult. The risk on the government side was the minimum water to be bought even in case of no activities in the area.

The supply of water to NWSGA was planned to be from River Nile at Maadi area and build a new water treatment plant (WTP) and a pipeline through Maadi-ElKatamia road to the NWSGA. The disadvantage of this solution is increasing the risk on the GOE as to pay the minimum water volume price. The decrease of the minimum water volume will lead to increase the water tariff and accordingly increase the risk on GOE again.

The alternative solution, shown on the schematic diagram, was to utilize the water treatment facilities at the 10th of Ramadan City and build a new WTP at a later stage when the demands of NWSGA could be clearly identified. The schematic diagram showed also the present and expected demands at the target year (2035).



Schematic Diagram for The Components of the Project

The advantages of this alternative is the presence of water facilities which could be useful to limit the initial investment to the construction of water pipeline and its booster pump station and reservoir and also the presence of water consumer in the neighborhood

cities as 10th of Ramadan (industrial and residential), Badr City (industrial and residential), and ElShrouk city (residential) and some residential complexes. The presence of these water consumers from the first moment of the project can raise the minimum water volume and accordingly decreasing the water tariff and lowering the risk on the government side. This modification has made the project attractive to the investors to bid in this project.

A feasibility study was prepared to estimate the preliminary cost of the project including the capital cost, operation and maintenance cost as well as the electricity consumption cost. The feasibility study showed that the required investment in the project is about 1,011 million LE at the prices of 1999.

The project was scheduled to be in two phases:

Phase 1: (The mentioned capital cost is as determined in the feasibility study)

- (1) Operation and maintenance of the existing water facilities at 10th of Ramadan city including :
 - (a) raw water intake and pump station at Belbis area
 - (b) raw water booster at the mid-way between Belbis and 10th of Ramadan city
 - (c) two water treatment plants at the 10th of Ramadan city.
- (2) The construction of the first stage of Suez Treated Water Pipeline, the booster station, break pressure tanks and storage tanks with a total capital cost of 244 million LE.

Phase 2: Phase 2 will be started when the demands of the consumers increase the available capacity at the existing water facilities. This was expected to be 8 years after the start of the project. This phase will include the construction of intake and raw water pump stations and raw water pipeline with a cost of about 59 million LE and a water treatment plant with a capacity of 200,000 m³/d with a cost of 82 million LE and the construction of the second line to Suez and the associated booster and tank with a cost of 180 million LE. The total cost of Phase 2 is 321 million LE.

Total project operation and maintenance: 166 million LE.

Total project electricity cost: 280 million LE.

Preparation for Bidding

The success of a BOOT project will depend to a large extent on what occurred before the sponsor group was selected. The procurement alternatives include competitive bidding, sole source procurement, or some limited tender system. The chosen procurement procedure was the competitive bidding. The competitive tendering system helps to foster efficiency and competition, which are the hallmark of private sector participation in infrastructure projects. There is a danger in any negotiated system that the award may be based on arbitrary judgment or undue influence. The integrity, equal treatment and transparency of the procuring process, which are of paramount importance when it comes

to attracting a number of foreign sponsors, is certainly better secured through a formal tendering system than through a negotiated system, the outcome of which may be unpredictable for the sponsors.

In such these projects, most governments will want to pre-qualify the potential investors. In addition competent prospective bidders may be reluctant to participate in the cost- and time-intensive procurement proceedings for BOOT contracts if they risk having to compete with unrealistic tenders submitted by unqualified or disreputable companies or if they think the number of bidders is too large. To ensure that experienced and serious sponsors with the ability to develop the project are invited to submit tenders and reduce the bidding risk, a pre-qualification process was carried out between 19 (nineteen) international and local companies. The parameters of the pre-qualification were:

- The experience of the company in a similar project of the same nature, complexity and expenses,

- The outstanding projects of the company,

- The equipment capability of the company,

- The personnel capability of the company,

- The financial capability of the company including the annual turnover of the company and the evaluation of the audited financial sheets for the last 5 years.

- The legislation history of the company weather it is in the favor or against the company.

A period of 3 months was given to the companies to submit their pre-qualification documents to allow the investors to show their best capabilities supported by documents. A number of fifteen companies has been pre-qualified to bid in the project and invited to withdraw the tender documents.

A quality bid package and a transparent, well-defined bid evaluation process are of critical importance for a successful BOOT project. The bid package included.

- Tender invitation which showed the terms of tender process, the evaluation parameters, and procedure, the required bid bond and the format of the tariff tables.

- Concession agreement which showed the contractual aspects that should be taken into consideration when preparing the bid and the obligation of the government and the company.

- Usufruct agreement which showed the obligation of the government and the company relating to the land be supplied to the company to implement the project and the right of way for the pipeline.

- Translation for Law No. 8 for 1997, which is necessary as the project area is subject to this law which encourage the investment in the infrastructure projects in the new investment area in Egypt.

- Drawings album, which shows the route of the Suez pipeline and sites of the intake and water treatment plant.

Technical Specification which stated the expected minimum requirements in the project and construction materials including civil works, mechanical works, water treatment plant, and electrical works specification.

General conditions and specifications which regulate the work on the construction phase between the company and the representative of the government.

Central Bank Guarantee which showed that the ministry is guaranteed by the official bank of the government to pay the company any amount on due time.

A period of six months was given to the companies to bid in the project. Six companies submitted their bid at the end of the bidding period.

Selection of the winning bidder

Technical evaluation

The evaluation procedure was carried out on two steps (1) technical and (2) financial. A technical evaluation was conducted regarding the various items of the project such as:

Technical references and financial capacity.

Schedule of time.

General quality of the Tender:

Presentation.

Conformity to the tender documents.

Accuracy of the offer point.

Accuracy of description, drawings etc.,

Catalogues

Technical quality of the Tender:

Water treatment plant and raw Water Intake

Process design selection (Water Treatment)

Detailed design selection (Raw Water Intake)

Efficiency and compatibility of the equipment

Characteristics of the selected equipment

Quality control agreement (ISO)

Measures dealing with environmental protection

Pipeline

Pipe material, lining and external protection

Pipe manufacture and origin

Butterfly valves (source & Origin)

Gate valves (source & origin)

Air valves (source & origin)

Water hammer study

Water hammer protection devices (source & origin)

Crossing Design (Railway & Roads)

2033									
------	--	--	--	--	--	--	--	--	--

Year	Project company cost 2					Total cost 1+2
	Tax	Social Security	Customs	Electricity		
	LE	LE	LE	In plant LE	On pipeline LE	LE/m ³
2000						
2033						

The tariff was divided into two major sections (1) company cost 1 which include the cost of capital investment and the operation costs which could be subject to inflation during the whole term of the concession and the maintenance cost which the government will pay to the company at the maximum of the maintenance budget offered by the company and the lease cost that will be paid by the company to the government as a lease for the existing water facilities , (2) company cost 2, which include all the cost that could be changed by any change in law such as customs and duties, social security on the contract and not on the employees as this should be covered in the operation cost, all kind of taxes, and the electricity consumption (separating between the electricity used within the plant and that used along the Suez Treated Water Pipeline).

Financial and Evaluation Assumption

In the tender documents a number of assumption was given to assure the transparency of the bidding and evaluation processes, these assumption was:

- The minimum water volume paid by the government will be 60% of the designed capacity of the treatment plants including 50,000 m³/d for NWSGA.
- The evaluation will be at the net present value (NPV) of the 60% supply using 14% discount rate.
- For the comparison of the bids, the inflation rate of the local and foreign currency shall be 4.5 and 3%, respectively.
- The cost of electricity will be 0.25 LE/kWh.
- The tariff (T1) will be based on 60% supply and another tariff (T2-T5) for each 10% in excess of 60% supply. This excess demand tariff will be used in negotiation with the first ranked bidder if it is not the lowest tariffs.
- The exchange rate of the US\$ is 3.41 LE and the GOE will take the risk of the fluctuation of the foreign currency.

Results of the Financial Evaluation

For the confidentiality of the numbers that offered by the companies, the name of the companies is not shown and also the numbers indicated in this paper is a relative weighted numbers to each others. One of the six companies was not responsive to the financial requirements of the tender documents. Table 2 showed the weighted results of the financial evaluation for the remaining five companies.

Table 2: The weighted results of the financial evaluation

Financial Parameter	Bid 1	Bid 2	Bid 3	Bid 4	Bid 5
Total GOE cost at 60% supply	4.45	1.26	1.00	1.01	1.38
Total GOE cost at 100% supply	5.04	1.51	1.00	1.32	1.36
NPV at 60% supply	2.37	1.08	1.00	1.06	1.52
NPV at 100% supply	2.89	1.40	1.00	1.47	1.62
NPV at 60% excluding electricity	2.89	1.01	1.05	1.00	1.56
Avg. Payment of GOE / Year at 60%	4.45	1.26	1.00	1.01	1.38
Avg. Payment of GOE / Year at 100%	5.04	1.51	1.00	1.22	1.36
Average Tariff at 60%	4.46	1.26	1.00	1.01	1.38
Average Tariff at 100%	5.05	1.51	1.00	1.22	1.36
Average Weighted Tariff for 70-100%	6.68	2.23	1.00	1.63	1.36
Foreign to local currency (company cost1)	5.54	1.00	2.24	6.98	0.00

The financial parameters shown on the table are:

- The total amount of money that the GOE going to pay at the end of the contract when the supply of water is at 60% or at 100% of the maximum designed capacity of the treatment plants.
- The net present value of these amounts at 60% and 100% supply and the used interest rate is 14%.
- The average annual payment of the GOE at 60% and 100% supply.
- The average tariff of the water at 60% and 100% supply and the average weighted tariff for the demands that exceed 60% of the supply.
- The foreign to local currency ratio excluding the company cost 2 as this cost should not be affected by the loan arrangement and the project financing.

It was decided in the tender documents that the evaluation will be done on the net present value at 60% supply as a minimum water volume to be paid by the government to the company. It is clearly shown from the table that the bid which had the lowest net present value had also the lowest value in all the financial parameters that was taken into evaluation.

It is seen that the percentage of the total cost and the average payment had the same value as the average tariff which means that the average tariff has a good comparison indication although it is meaning less when calculating the effect of the period of the contract.

Conclusion and Recommendation

The project procedure and evaluation process can give the following recommendation:

- The good engineering solution of the project make it financially viable and encourage the sponsors to bid in the project.
- Pre-qualification step is essential in such project to give the sponsor confident and suitable base to think about the project.
- The competitive bidding is the most suitable procedure in such projects.
- The high the percentage of the minimum payment, the less the tariff of the final product of the BOOT project.
- The feasibility study is required to assess the viability of the project and the financial viability of BOOT projects.
- The net present value is a good indication on the prices submitted by the sponsors.
- The average weighted tariff was a good base for the negotiation with the selected bidder if his bid was not the lowest one regarding this tariff.
- The foreign to local currency ratio give a good indication on the risk of government for the currency exchange rates.
- It is recommended in the future to negotiate with the bidders within 10% of the lowest bid to have the most suitable bid from the financial point of view.

References

- Dominique Lorrain "L'industrie de la ville, Communication au congres international de sociologie; in Les operateurs de reseaux. CNRS, GDR 903, Paris, 1990, pp. 81-91.
- UNIDO BOT guidelines, United Nation Industrial Development Organization, Vienna, 1996.
- Verin, Helene "Evaluation des avantages du recours a l'entreprise dans les grands travaux de l'Etat (18E siecle)- Poiliques at Management Public. Paris, No. 1 1989, pp. 57-78.