

# Investing in Water Infrastructure Projects

Special Report: Accessing Capital Markets for  
Water Infrastructure Investment

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## Abstract

The need to renew ageing water infrastructure and to build additional capacity in the face of fiscal constraints on the public purse, combined with the desire for increased efficiencies in project delivery and operations, demand the increased use of private sector participation in terms of both technical expertise and sources of finance. On the latter front, players within the marketplace ought to consider the opportunity to combine their skills and abilities with the financial capacity of the capital markets (both private and public) in order to expand their abilities to deliver improvements as well as to broaden the range of solutions available to municipalities or other owners of water infrastructure systems.

The trend towards increased private sector participation, through public-private partnerships or performance-based contracts (for example), is expected to be very long in duration (e.g., decades). This is manifested by the substantial investment already made by fund management firms as well as banks to develop their capacities in this arena.

A general review of the trend towards increased private sector participation, examples of various contractual arrangements, and the attributes needed to attract capital from the private sector are presented herein.

## Introduction

That the need for improvements to water infrastructure in both the developed and developing world exists and is growing is undeniable. The driving forces behind this need include population growth, urbanization and climate change.

Although the present work is largely intended for audiences in the well-developed countries of Canada and the United States, many of the principles do apply universally, albeit with varying degrees of importance and complexity.

Certainly, many parts of these countries are blessed with an abundance of fresh water and the municipalities or utilities in these areas do not need to be nearly as creative in sourcing, treating and distributing water as, say, Singapore, which is becoming increasingly reliant on treating captured stormwater and significantly reusing its domestic wastewater for non-potable and potable uses. Nevertheless, there has generally been a history of underinvestment vis-à-vis the maintenance and upkeep of systems that have been installed, and accordingly, these ageing systems require significant investment to continue to provide an acceptable level of service to growing populations.

At the same time, there are parts of these countries that are more desperate for water, such as in the southwestern United States. New water supplies and

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*There has generally been a history of underinvestment vis-à-vis the maintenance and upkeep of these aging water systems which require significant investment to continue to provide an acceptable level of service to growing populations and to support economic growth.*

*Cost bases of municipalities are increasing, however, traditional funding sources from the public sector have largely not grown at a commensurate pace.*

*Only 1.66% of Ontario's 2009-2010 infrastructure spending plans are allocated towards water projects.*

transmission systems will be required to deal with the combined effects of increased population and diminishing supplies from existing sources, largely due to climatic variability.

Although these challenges are somewhat different, there are some common prevalent themes. For instance, increased emphasis on system efficiency is a logical outcome of the dynamic relationship between diminishing supply and increasing demand. As well, the wise allocation of financial resources to optimize the returns to the investments made, measured through increases in service area or population and levels of service, is critical when such resources are increasingly scarce, as is generally the case in the water sector.

Local trends have seen higher levels of government downloading responsibilities to lower levels of government and this impact is greatest on local municipalities by virtue of being at the lowest level in this hierarchy. The result is that the asset, and hence cost, bases of the municipalities are increasing, placing increased demand on their financial resources. At the same time, however, municipalities are significantly restricted in their ability to source capital to undertake these projects as they have a limited number of levers at their disposal (e.g., property taxes; tariffs). A significant portion of public financing comes from income taxes and, in this regard, municipalities are reliant upon transfer payments from higher levels of government. The quantum of such transfer payments have largely not grown at a commensurate pace, thereby exacerbating this problem. Canadian municipalities are not able to operate with fiscal deficits and are therefore limited to borrowing; the extent to which they can do so is (justifiably) limited to pre-specified levels linked to tax revenues and increases in borrowing consequently places their credit ratings at risk. In today's economic climate, the ability for municipalities to lever the private land development community through the imposition of development charges (or impact fees) is diminished as the real estate market is significantly softened compared to the past decade or more of rapid expansion.

Certainly, government stimuli geared toward infrastructure will temper some of these concerns; however, this capital is largely geared toward other infrastructure sectors such as transportation. In fact, of the \$15.6 billion (CAD) dedicated in Ontario's recent budget for infrastructure projects in 2009-2010, only \$259 million (1.66%) has been allocated to water projects (Province of Ontario, 2009).

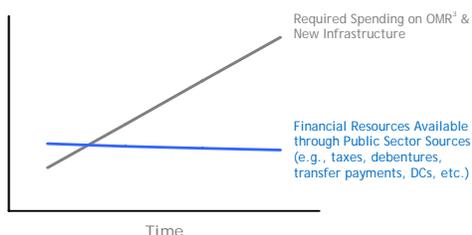
The trends discussed above are summarized as follows:

- The required spending on water infrastructure is increasing;
- The financial resources available to do so are stagnant; and
- The gap continues to widen.

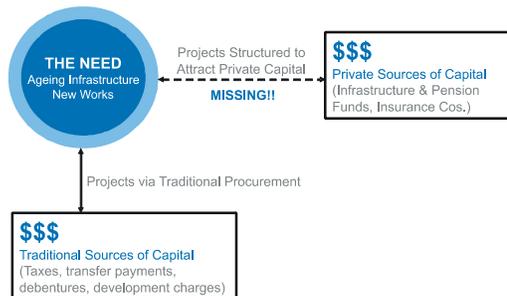
The resultant impact on the water sector is that municipal and utility managers responsible for the provision of these services are becoming increasingly challenged - above and beyond their current challenges - to do what is expected of them by society. To deal with the trends noted above, the two most obvious levers available to utility managers include:

- Reducing the level of service or standard of living.
- Accessing additional financial sources.

The balance of this paper is based on the notion that reducing the level of service, or standard of living, is not acceptable. The rationale for this is that: (i) society ought to seek new or alternative ways of sustaining current standards before allowing them to decline; and (ii) if we assume economic productivity is directly linked to such levels of service, it may be counterproductive to limit this element as it is a generator of a nation's wealth. It is acknowledged that this should be subject to more thorough analysis and the optimal solution may indeed be a blend of the measures noted above. Whatever the case, there is a need to explore the second measure of accessing additional sources of capital, and this is the purpose of the present work.



*There is more private money available to fund projects than there are suitable projects to make use of such funding.*



Thematic representation of market

*What is generally missing is the structuring of projects so as to attract private capital.*

***“We have to accept that water needs to be under public control and that the public sector then decides what role the private sector might play in service delivery.”***

*Economic rate of return (ERR) differs from the financial rate of return in that it takes into account the effects of factors such as price controls, subsidies and tax breaks to compute the actual cost of the project to the economy.*

Source: BusinessDictionary.com

## Market Conditions

In general, there is more private money available to fund projects than there are suitable projects structured to make use of such funding. In the past several years, over 200 infrastructure funds have been established around the world with more than 92 in North America alone. These private funds have been created with the realization of infrastructure as an asset class on the basis that infrastructure investments are generally very sound. Moreover, many of these funds are focused on the North American market largely due to the relative strength and creditworthiness of these economies. The result of these factors, as well as the very structure of the funds whose managers are mandated with placing investments, makes for a competitive environment for private capital.

Notwithstanding the above, credit markets have been massively impacted in recent months and continue to be extremely tight as at the time of writing. Historically, infrastructure projects undertaken with private sector participation in financing have been highly leveraged in the developed markets of the United Kingdom, Europe, Australia, Canada and the United States. It has not been uncommon for financial structures to contain upwards of 90% debt-to-value ratios. The result is that, in order for projects to proceed in current times, different structures are required, and the increased use of private capital for the equity component of these deals - that is, lower leverage - is one method of improving this environment.

What is generally missing is the structuring of projects so as to attract private capital. Traditional procurement methods where public sources of capital are used to deliver projects are well ingrained in the *modus operandi* of municipalities and utilities, largely as a result of many decades of operating under conditions where public capital was plentiful.

An additional motivation to undertake water infrastructure projects is for the Keynesian stimulus effect that results and, increasing the modalities by which projects can be delivered, further improves these conditions (Reiter, 2009). These can include accessing capital from non-traditional sources. It logically follows that there would be an expected increase in the number and aggregate value of projects undertaken, thereby supporting the local workforce and enabling economic development to occur more quickly due to the infrastructure being in place sooner to support it.

## Attracting Private Capital

Richard Aylard, a director of Thames Water is credited with the following quote (Holland, 2005):

*“We have to accept that water needs to be under public control and that the public sector then decides what role the private sector might play in service delivery.”*

As with any decision regarding investments or other contractual arrangements, an assessment of the benefits, costs and risks is required by all parties in order to appropriately arrive at arrangements which are mutually beneficial. It therefore follows that, in order to appropriately engage with the private sector while protecting the public interest, the public sector should be sufficiently strong and sophisticated to make such assessments.

In fact, this has generally been seen by the increasing number of groups that have evolved to deal with matters related to increased private sector participation in delivering infrastructure projects. As well, the number of North American projects being advanced with such delivery models is increasing.

Of course, this does not preclude the need to appropriately determine which projects are indeed suited for private capital and which continue to be best delivered via traditional means. In this context, the concepts of “value for money” or “economic rate of return” are often referenced.

The overriding goal of a municipality and/or water utility is to appropriately access available resources, financial and otherwise, in order to efficiently

deliver services to its consumer base at an acceptable standard. To reiterate, in order to access private sector resources, representing a source of capital and expertise, it is evident that the public sector must possess the capabilities to interact with the private sector.

Accordingly, public sector entities (municipalities, utilities, etc.) are continuing to develop internal expertise so as to evolve their internal processes to improve the attractiveness of their projects to the private sector. These include procurement processes, legal arrangements, output-based performance specifications and matters related to financial structuring. It is noted that the fundamental competencies (e.g., engineering, finance, legal, etc.) are largely already in place as part of the public sector's normal course of business; it is the expansion of delivery models and the associated use of these resources in that context which is sought.

## Illustrative Examples

By way of examples, some methods by which municipalities and/or utilities can make use of private sector resources are discussed below.

### Contracts with Availability Payments

**Theme:** *Aligning the interests of the public and private sectors.*

In these cases, the private sector contractor receives a prescribed payment after a project is completed and in operation, delivering the intended service. It is the "availability" of the service desired by the public sector counterpart that triggers payments. Furthermore, the payment stream may be stretched out over a long duration, all subject to ongoing performance verification of the system.

In doing so, the interests of the private sector (i.e., financial interests) are aligned with those of the public sector (i.e., desired service). It is this alignment of interests that provides the appropriate environment for cooperative relationships over the duration of the contract which, as noted above, may be extended to match the service life of the infrastructure in question, or some fraction thereof.

*Under traditional procurement methods, the warranty period is rather short in comparison with the life of the project...the contractor is financially linked only until the expiration of the warranty period.*

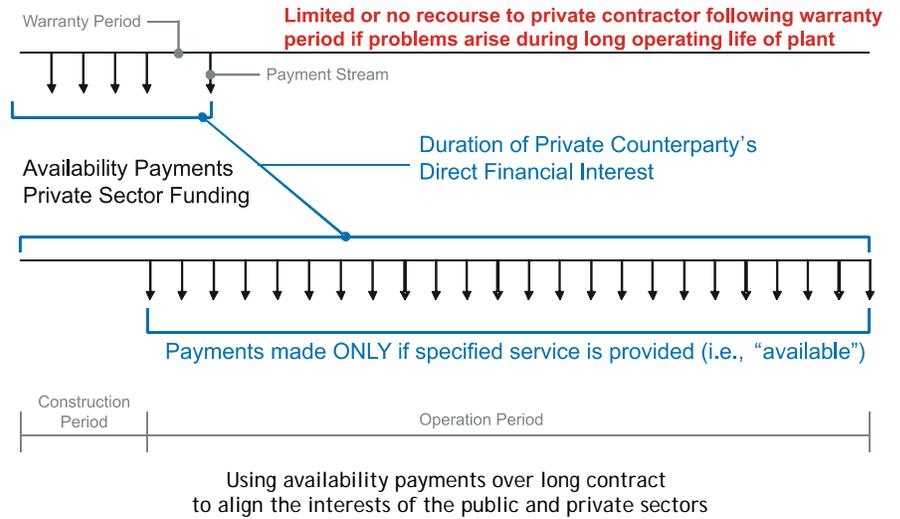
*Result: contractor's incentives are weighted toward surviving warranty period with minimal cost implications.*

Consider the case of a water transmission pipeline. Under traditional procurement methods, the private contractor is paid as milestones are completed during construction with ultimate payment made following a warranty period of typically one or two years. This warranty period is rather short in comparison with the life of the pipeline which can often be on the order of forty or fifty years. As a result, the contractor is financially linked to the project only until the expiration of the warranty period, noting that significant portions of its payment occur prior to operation of the pipeline. Thereafter, there is significantly less leverage that the public sector can employ against the contractor in the event that problems may arise as a consequence of installation methods or materials and which did not manifest themselves before the warranty expired. As a result, the contractor's incentives are largely weighted toward surviving the warranty period with minimal cost implications. These risks have traditionally been mitigated through the employment of in-house or contracted inspectors; however, such an approach of "policing" is not without its shortcomings.

The figure below illustrates how the interests of the public and private sectors are aligned throughout the duration of the contract life which can be made to closely resemble the intended life span of the infrastructure in question.

The public sector exercises its control over the infrastructure through the issuance of the "availability payments" and, as such, is able to establish and enforce desired levels of service. Moreover, "availability" may encompass many performance indicators such as volume, quality, operating pressures, reliability of service, etc.

Traditional Procurement with Public Funds

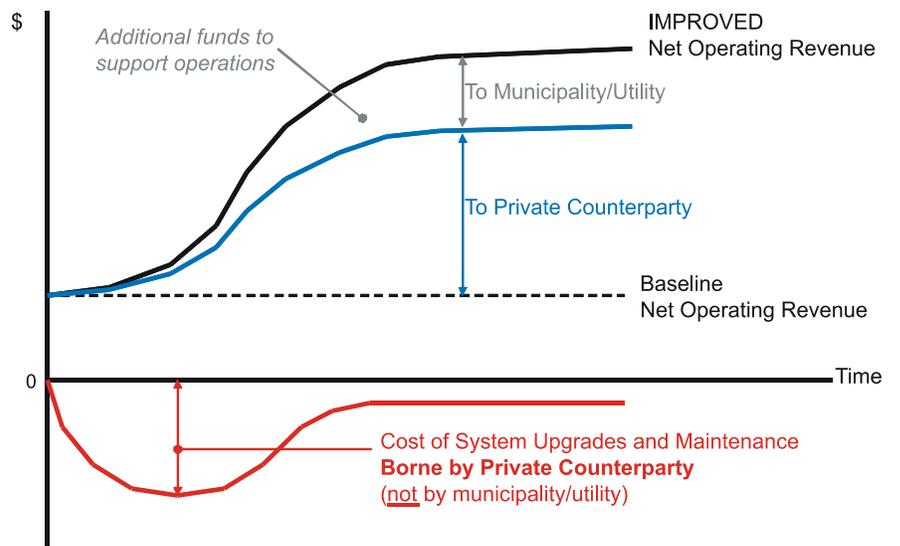


Performance Based Contracts

In such contracts, the private contractor only receives payment based on pre-specified improvements to system performance. For instance, specified improvement levels can be awarded with monetary compensation if the former cannot be directly linked to financial performance. Alternatively, where such system improvements directly impact operating margins, through either or both of the increase in revenues or the decrease in operating costs.

Since the contractor can be made to be largely responsible for the costs associated with implementing system improvements - which may be physical or managerial in nature - the municipality or utility transfers the risk of this investment to the private contractor. Furthermore, since the contractor only benefits when the municipality or utility (the public, in general) benefits, often in commensurate proportions, there is a resultant alignment of interests between both sides to the agreement.

*Theme: Aligning interests...*



Aligning the interests of the public and private sectors using performance based contracts

The above figure illustrates how a performance based contract may be structured to improve the operating margin of a utility where the improvement costs are borne entirely by the private sector contractor and the benefits derived by the municipality or utility are then shared between both the public and private sectors. Of course, the private sector will not undertake such a project were it not for a reasonable risk-adjusted expectation of return; however, what is important from the public perspective is that this return is derived only when the public itself realizes a return of a greater value.

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Water sector projects that may benefit from performance based contracts include those related to improving water efficiency (e.g., toilet and shower head changeout programmes, metering improvements coupled with demand management programmes) as well as water loss control (e.g., pressure management, leak reduction and repair). The World Bank has conducted significant work on the latter topic and its application in the developing world (Kingdom, Liemberger & Marin, 2006).

### Parallels with the Land Development Process

It is instructive to illustrate the comparison of the above approaches for private sector infrastructure delivery with the well established land development process.

In one of its simplest forms, land developers convert raw or vacant land into a collection of land uses including roads and other municipal services, building lots for houses and other uses. The roads and municipal services are built to a standard set by the municipality which “assumes” - that is, takes ownership and responsibility of them - following satisfactory installation including a warranty period. Moreover, these works are installed and paid for by the private sector land developer who, in exchange, benefits from its ownership of the residual inventory of marketable building lots or blocks. The construction and financing risk is therefore borne by the private sector in such circumstances.

As a result of this process, the economic base of the municipality is also increased. This legal construction has been in place for decades and is a proven model that can be built upon to meet the challenges faced by managers of water and other infrastructure systems.

### Collingwood-Alliston Pipeline

In February 1999 - 10 years prior to the time of the present work - the public sector engaged with the private sector to construct a 57 km pipeline worth \$27.3 million in capital expenditure to construct a pipeline from Collingwood to Alliston (Ontario) predominantly to service the development of an automobile manufacturing plant, as well as to provide for domestic consumption. The 600 mm diameter pipeline is intended to ultimately deliver upwards of 60,000 m<sup>3</sup>/d of potable water. The contract includes a 15 year period following construction for the pipeline’s operation and maintenance.

This is an example of how such concepts have been successfully applied at the local level to deliver a service on a timely basis, however, there are lessons to be learned from this case which can help to guide future projects. These arrangements required that the private sector provide debt financing of \$2.9 million or 10.6% of the total project cost; the equity component of the financing package involved the public sector contributing \$8.3 million or 30.4% of the total project cost. The balance of the funding was derived from the Province of Ontario in the form of debt financing (\$11.1 million) as well as a grant (\$5 million).

The benefits are not isolated to Alliston. The mere presence of a potable water supply allows for the potential of valuable off-take arrangements that would not otherwise be possible, the result of which is that economic development is supported by the infrastructure which, of course, is its *raison d’être*. Recent off-takers include the community of Lowell in Clearview Township as well as

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*Municipalities and/or utilities do not necessarily need to increase their debt loads to accomplish purposeful infrastructure projects.*

*The current market can simply be described as having more money than projects to fund.*

Baxter and Angus in the Township of Essa.

What is perhaps the most significant development in the private capital markets since the time that this arrangement was established is that there is an increased appetite on the part of the private sector to provide more risk-bearing equity capital investments. The Collingwood-to-Alliston pipeline did not include this feature which, as noted earlier, also assists to align interests between the parties to the contract. The result of this ability is that municipalities and/or utilities do not necessarily need to increase their debt loads to accomplish purposeful infrastructure projects. Another perspective is that any debt that may be required may be secured against the project it is intended for and not the overall wealth of a public body. It is interesting to note that the resultant debt load from this project is a point of contention within the Town of New Tecumseth, the municipality within which Alliston lies (Kemp, 2009a, 2009b). Perhaps a solution using the capital markets is possible if the current arrangements are not sustainable.

## Conclusion

To deal with the increasing need (demand) for infrastructure improvements, whether in the form of new installations or aged existing systems, coupled with limitations in the sources of capital traditionally available to deliver these improvements (supply), municipalities may consider further accessing the capital markets to bridge the gaps.

Water infrastructure investments in North America are safe, stable and reliable; characteristics of which have attracted the attention of private sources of capital including pension and infrastructure fund structures, among others. Furthermore, the amount of capital that has been earmarked for these types of investments is nothing short of staggering. The current market can simply be described as having more money than projects to fund and, accordingly, there is opportunity to implement projects that would otherwise have to be deferred due to budgetary constraints.

Of course, not all projects are appropriate recipients of private sector capital and other forms of participation. Also, in order to appropriately engage with the private sector, a strong public sector counterpart is required. Both these points speak to the strengthening of public sector capacity to perform the requisite assessments and negotiations in order to attract the private sector while simultaneously, and arguably most importantly, maintaining control of public systems and protecting the public interest.

For a variety of factors, the public sector in Canada and the United States, as represented by varying levels of government or extensions thereof, including municipalities and utilities, is positioned to close the widening infrastructure gap through renewal of existing and ageing infrastructure and the development of expansions thereto in addition to new systems. This can be accomplished by the most judicious use of resources, financial and otherwise, that are available.

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