

Viewpoint

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Sydney's Water—A Suitable Case for Private Treatment?

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Until recently, Sydney's water was captured, stored, treated, and reticulated by Sydney Water, a state-owned corporation. Sydney Water had been a statutory authority, the Sydney Water Board, until it was corporatized in 1995. The water supply system, designed in the nineteenth century and restructured in the mid-twentieth, drew on raw water that was of good quality by world standards, and until 1989 treatment went little further than screening, disinfection, and fluoridation. But as water quality guidelines became more stringent, Sydney's raw water came under increasing stress.

After establishing that consumers were willing to pay for maintaining the quality, the Board decided to contract for a privately built, owned, and operated (BOO) system for water treatment. Responsibility for harvesting and storing raw water and delivering treated water would remain with the Board (and later, Sydney Water). Several factors persuaded the Board to adopt the BOO system for water treatment. It faced major capital outlays to upgrade and expand wastewater treatment capacity. There was a growing likelihood that it would be corporatized, making a "delegated service" approach involving the private sector and providing access to a full range of international technology attractive. And the subsequent involvement of seventeen consortia in the "tournament" for the market revealed a level of competition likely to produce outcomes that the Board, relatively inexperienced with filtration systems, would find difficult to match. In 1993, the Board contracted with two consortia—Australian Water Systems and North-West Transfield—for two water treatment plants. A third contract was let to another consortium, Wyuna Water, in 1994. By the end of the century, almost all the drinking water con-

sumed in Sydney will be treated by these plants. This analysis of the Sydney experience may provide insights for other agencies contemplating the private provision of treatment services.

Choosing the operator

Once the decision had been made to involve the private sector in providing treatment systems, important questions arose about how many contracts should be awarded and what restrictions should be placed on successful tenderers. The Board determined that three contracts would be awarded for the four proposed treatment systems, combining the two smallest systems under a single contract. The successful bidder for the largest project would be ineligible to tender for the other two. Under the protocol for accepting bids, only bidders that had not successfully bid for one of the other contracts, and that met the minimum acceptable technical standards, would be considered.

The initial allocation of bargaining power under these procedures helps set the basis for negotiations that may be required during the life of a contract. For example, if it became necessary to expand plant capacity during a contract, the water treatment company would need to renegotiate water tariffs to recover its expansion costs. By opting for several operators, the Board gains access to information from each that can be used as a benchmark in assessing the performance of the others and in negotiating tariff adjustments. It also gains access to a wider range of water treatment technologies, strengthening its hand in future expansions and upgrading.

This approach has costs, however. For example, the successful bidders for the second and third





contracts may not have been the lowest-cost bidders meeting the Board's minimum technical specifications. And if firms could win all three contracts, they might offer more attractive bids, reflecting size economies and any expected benefits in subsequent bargaining. The Board minimized the cost to the system of this exclusionary protocol by awarding the largest of the three contracts first.

Two other factors affected the selection process. The Water Board prepared its own reports and design plans. This gave it a fallback option should the BOO approach have to be abandoned for some reason. The detailed process specification in these studies, later provided to the tenderers, yielded important time and cost savings to the successful tenderers. The Board also established a capability to assess bids and negotiate the final terms of water treatment agreements. This required the Board to incur substantial costs in setting up a new legal and commercial "infrastructure." The Board wanted to be able to deal with the risk-sharing implications of the BOO path, and the Board's legal advisers recommended that it cover contingencies in great detail and anticipate a wide variety of specific events that could affect its risks.

The water treatment tariff structure

The water treatment tariff structure agreed to has two parts.¹ First, an availability charge is fixed, independent of the volume treated, to cover about 80 percent of the financing, establishment, and fixed costs incurred by the water treatment companies in the timely construction and operation of the plant. Penalties are charged in the event of breakdown. Second, a usage charge is set, a megaliter rate that declines with quantity. The agreed tariffs are subject to change if the treated water falls short of the quality specified in the contract or the quality of the raw water supplied for treatment either exceeds or falls below parameters based on the highest and lowest water quality over the preceding twenty-five years.

Risk sharing

The Board put the tariff structure in the benchmark tenders to provide what it considered adequate protection for the financiers against the financial risks associated with the projects' large fixed costs, while leaving the consortia to bear risks relating to volume-related operating costs. It priced treatment at cost at the margin to protect consumer interests. And as the following paragraphs show, the Board structured the water treatment agreements according to the principle that specific risks should reside with the parties best able to assess and manage them.

Completion and commissioning risks. The water treatment company is responsible for completing the project on time and to specifications that meet agreed acceptance tests demonstrating that the plant is ready for continued use at the required capacity. The water treatment agreement assigns the completion and commissioning risks to the water treatment company through the availability component of the tariff, which is based on the fixed costs expected under timely completion of the construction phase.

Market risks. Although the fixed availability charge in the tariff partly insures the water treatment company against plant usage that falls short of the designed capacity, the company otherwise bears the risks of fluctuating demand from Sydney Water by agreeing to meet all demand. The contract specifies that Sydney Water must assist the water treatment company in designing capacity to meet demand by providing information on its demand management strategy, including demand projections for the next two, five, and ten years.

Granting exclusive rights to treat water for a designated market involves tradeoffs. The government—through the Board—has tied its hands with respect to competition for the contract-winning treatment plants. But the contracts themselves should reflect this exclusivity, in the terms offered by the treatment companies. If the Board's demand projections miss the mark and capacity increases are called for, the con-

tract provides for adjustments to the tariff to shift risk arising from inadequate projections away from the water treatment company.

Performance quality and quantity risks. These risks lie with the water treatment company provided they do not involve plant expansion, in which case the risks would be shared through a renegotiated tariff. If the water treatment company fails to meet quality standards or required volumes, Sydney Water has recourse to three measures: tariff reduction or nonpayment, step-in rights, and termination of the contract. Monitoring provisions give Sydney Water the right to satisfy itself that the water treatment company is operating and maintaining the plant in accordance with the water treatment agreement. If Sydney Water finds that the company is failing to do so, it will notify the company, which must respond with an action plan to be agreed upon. The company will carry out approved quality tests whose results will be subject to audit, and Sydney Water will have the right to conduct its own tests. Disputes over results will be settled by a third party.

Raw water supply risks. Whereas the risks relating to the output (clean bulk water) reside entirely with the water treatment company, risks relating to the variable quality of the input (raw water) are shared by Sydney Water and the company. The quality of the raw water that Sydney Water harvests in its catchments is only partly under its control because of storms and floods. The water treatment agreement accounts for this partial control by specifying that, to avoid a penalty tariff under the terms of the contract, Sydney Water must provide raw water whose quality falls within a range established over the past twenty-five years. This provision gives Sydney Water an incentive to manage its catchments so that raw water quality is at least maintained in the established range.

Operation and maintenance risks. The risks of operating and maintaining the plant—functions that include providing staffing, skills, chemical supplies, power, process control, and disposal—reside with the water treatment company. This

accords with the company's full autonomy in daily operations under the water treatment agreement. The operators expect that contracts will be renewed at the end of the contract period. This expectation and a provision allowing Sydney Water to buy the plant assets at a price based on its own evaluation provide incentives for the operators to avoid running down the assets toward the end of the contract period.

Upstream risks. Sydney Water will continue to be responsible for operating and maintaining assets "upstream" of the treatment process. These include the catchment, the river systems within it, and any canals, pipelines, dams, and reservoirs used in storing and reticulating the raw water. In announcing its catchment management policy during the bidding process, the Board committed itself to a set of environmental standards to reduce uncertainty for tenderers.

Financing and economic risks. The water treatment company carries the risks of changes in interest or inflation rates during the construction period. But once the plant is commissioned, an indexing formula will take effect that will allocate the risks of inflation and changes in operating costs between the company and Sydney Water. Few details have been revealed about this important aspect of risk sharing.

Technology risks. The water treatment company bears the responsibility for technology, which must be proven and must meet required standards and specifications. But the contract specifies that changes in water quality requirements that call for new technology will trigger a renegotiation of the tariff, thereby sharing the risks of unforeseen changes in the standards agreed to in the water treatment agreement.

The water treatment agreement specifies appropriate contractual terms for technology transfer to Sydney Water and serves as the basis for a collaborative and cooperative relationship between the Board and the water treatment company. The water treatment company is expected to keep abreast of technology, perform on-site research, and share findings with Sydney



Water. This expectation is formalized by a component in the negotiated tariff to cover research and development costs of the water treatment company.

Natural disasters. In an emergency, whether or not caused by natural disaster, Sydney Water has the right to take whatever action it deems necessary to safeguard the system's security and maintain supply, including bypassing the treatment plants. In such events, Sydney Water will compensate the water treatment company, reimbursing access fees and treatment costs.

Regulated pricing and the BOOs

The Government Pricing Tribunal of New South Wales was established in 1992 to review and set prices for services considered government monopolies, including those of the Water Board. The Tribunal (now the Independent Pricing and Regulatory Tribunal) regulates Sydney Water's prices by capping its revenues. Its approach to the BOO treatment plants has been cautious. While noting that the BOO projects were proposed long before it was established, the Tribunal has made clear that it expects Sydney Water to inform the Tribunal about the contracts and about Sydney Water's obligations, to explain the risks involved and the sharing of these risks, and to demonstrate that the scheme is more cost-effective when adjusted for risk than alternatives, including direct provision by Sydney Water. The Tribunal has warned that it will not automatically pass on cost increases to customers unless the increases can be justified on economic or environmental grounds.

Environmental regulation

Critics have argued that the treatment plants reduce the incentives to improve catchment management and that better catchment management is an alternative to more intensive treatment. The tariff structure in the water treatment agreement, however, recognizes that abnormally low raw water quality will raise treatment costs for a

desired standard. By shifting the risk associated with poor catchment management back to Sydney Water, the tariff structure provides an incentive for Sydney Water to manage the catchment well. The agreement also gives a discount in the tariff for raw water that is of exceptionally high quality. If Sydney Water had built and operated the treatment plants itself, there would also have been incentives to find efficient combinations of treating water and improving catchment management.

Conclusion

The BOO option adopted by the Water Board for its new water treatment plants will receive its first real test as the largest of the plants comes on line and Sydney Water's costs start to reflect the price of delivering better-quality water. Willingness-to-pay studies support the decision to meet more stringent water quality guidelines. But how much of the cost of raising quality is actually passed on to consumers will be determined by the Independent Pricing and Regulatory Tribunal, which has sent clear signals that it will not rubber-stamp a full pass-on of the costs of the new contractual arrangements. Despite efforts to meet the demand for increased quality through the least expensive route, Sydney Water may find itself having to reduce costs (and services) elsewhere to achieve acceptable rates of return. A failure to achieve substantial cost savings elsewhere may mean politically unacceptable price increases for some consumers as Sydney Water introduces volumetric pricing and phases out cross-subsidies.

This Note is based on a longer article by the authors: "Privatising Sydney's Water Treatment," *Agenda: A Journal of Policy Analysis and Reform* 3 (1): 45–58 (1996).

¹ Although the detail of final contracts is confidential, the essential details of pricing and delivery structure were specified in the original tender documents and have been amplified in interviews.

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