Measurement as a key to success

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INTRODUCTION

Measurement is key to success in all the things you do in life and business. Measurement systems are used to monitor progress towards an objective and evaluate changes that affect a business and are critical in the ultimate success or failure of a company.

This paper describes the challenges faced by a new concession in Belize, and how it has tackled these from day one through the use of measurement as one of the methods to improve income, reduce Non Revenue Water (NRW) and provide customer satisfaction.

BELIZE

Belize is bordered on the North by Mexico on the West/South by Guatemala and the East by the Caribbean Sea and is approximately twice the size of Jamaica with only 25% the population.

Tourism is very popular in Belize it offers everything from Eco tourism to diving on the second largest barrier reef in the world. They have little heavy industry but do export a variety of products including cane sugar, citrus and bananas.

The population of Belize is very wide spread. This adds to the challenge of running the water company.

CASCAL

The parent company that owns 82% of Belize Water Services (BWS) is CASCAL, a joint venture company, consisting of Nuon, a large Dutch Utility company and Biwater PLC, which are based in the UK with major interests all over the world in Water and Waste Water Projects.

Cascal has a portfolio of highly efficient Water & Sewage Companies worldwide ranging from Chile, Central America, United Kingdom, Southern Africa and South East Asia.

The Cascal staff has Water and Sewage personnel with a wealth of experience in water and Sewage Operations all over the world that can be relied upon on short notice.
Cascal, under the local name of Belize Water Services Limited, started operations in March 2001; using 99% local workforce with Expatriates being utilized full time or as their expertise is required in key positions.

**CHALLENGES FACED FROM DAY ONE**

At the commencement of each Concession there are many things that needs to be improved or developed, but the extent of the problems are not often immediately apparent.

The first year was spent improving the things that were obviously required and evaluating the situation to develop a strategy for the future. Information and Measurement was poor at best and in many cases non existent.

Over 50% of the customer base did not receive a 24 hour per day water supply, and this was an obvious challenge which BWS rose to. By March 2002 Belize City received the best water supply they had ever experienced, giving a good quality water supply that provided the customer with quantity and pressure. However, this achievement brought its own challenges:

- Non Revenue Water Increased
- Water sales did not increase as expected
- Illegal Connections became more of a problem than initially thought

**DECISION TIME ON FUTURE STRATEGY**

In the first year it was recognized that not only did we need to achieve the initial goal but also it was crucial that we collected information and started to trend the day-to-day activities and trend this so we could understand what major issues were within the company.

We focused on several main topics:

- Infrastructure
- Billing System
- Measurement
- People

**Infrastructure**

The key points we needed to address were the state of the underground assets, pumps and storage tanks.

It became clear that leakage was a major problem, which had been exacerbated by the increase in pressure. The water and sewage installations were in general need of Investment and many of the storage facilities were unusable and in a dangerous condition.
Billing System

The billing system was very basic and was not able to give the proper management information needed to make good business decisions. The base information was in many cases incorrect.

Measurement

The measurement of bulk water was not adequate, so there was little understanding of where the water was going.

It was clear from the calculations from the billing system that the water sales per customer was extremely low.

HUMAN RESOURCES

Investment in staff was a priority. It was clear from past experience that this would take time and would need proper training and development for those willing to accept the challenge. It also meant that BWS had to invest in new staff with different skills to ensure the company's performance improved at an acceptable rate.

THE PLAN

Infrastructure

The strategic plan was based on the given that we would need to improve the infrastructure, but the pace of this would be dictated by the money available to invest.

MEASUREMENT OF CUSTOMER BASE

Purchasing a billing system that would be adequate for the needs of BWS would be required. This would give us good Management Information based on good measurement and customer details that we could use to support future business decisions. It would also give us a springboard to control meter-reading cycles to enable the data that makes up NRW to become stable.

It was identified that to achieve this we would need to carry out a customer survey through the whole of Belize to verify the customers' details. This was carried out with some alarming results on the number of leaks, illegal connections, and incorrect base data on the system. This was soon changed into a positive result by updating the billing records.

Measurement of Bulk Water

Macro metering in selected areas was required. This would enable BWS to understand
the water network better and to identify priorities and potential problems within the network. This included leakage levels, illegal connections or under registration of customers meters.

This measurement is a normal NRW practice provided information that reinforced the belief that we had a major illegal connection and under registration issue.

**Measurement of Customers**

It was clear that we would need to do something about Customer meters as many were very old and a small % were Imperial gallons meters. What we did not know was the extent of the problem or where the problem was at its worse.

Another challenge was that the meters to our larger customers were sometimes oversized therefore not registering accurately especially on low flows.

We were also aware of past mistakes on meter changing projects so we decided that this would be an investment with a constant measurement for success built in.

It was decided to initiate a number of trials that included:

- Key accounts
- Water supplied from a desalination plant in San Pedro (*an island off the coast of Belize City*)
  - A typical domestic area
  - All meters that was identified as Imperial gallons

The results of the meter trials were mixed and gave us all the evidence we needed on where to proceed.

Key accounts were showing a payback on investment of as little as six (6) months

San Pedro Desalination plant is giving to date over 20 % improvement in sales and a NRW figure of 6 %

Imperial gallon meters gave a minimum of 18% improvement in sales

Domestic trials showed that we could expect up to 15% improvement in all the meters we change in specific areas.

Certain known, locations where Well supplies are used to supplement BWS supply shows that meter changing was not a priority.

**Choice of Meter**

CASCAL and BWS recognize that there are a number of world-class meters on the market and that not every situation is the same so we set out some benchmarks before deciding on AMCO, formerly ABB Kent meters. The benchmarks included:

- Reliability in performance
Effective at all flow ranges including minimal flows
Value for money not necessarily the cheapest
After sales service given where we are located
A meter that would reduce the major tampering issues BWS experience
Meter that would cope satisfactorily with the water quality of Belize

Judgment on the decision

Without proper measurement Management decision would have been without foundation.
All the evidence pointed to a large NRW problem that was made up of technical and non-technical issues

BWS as a professional company do not like bad publicity. It has been our experience that since we have started to change customer.s meters as a planned project the following has occurred:

High consumption complaints rose dramatically
Media wrongly accused BWS of raising the water rate

BWS have always stated that they want to put in measurement that accurately reflects the water used by our customers nothing more nothing less.

It is proof that meter changing, if correctly controlled using good quality meters, makes good business sense.