Optimatics

optimizing water systems

Ashford Supply Optimization Study

Supply augmentation to trunk main system

Mid Kent Water undertook this optimization project to identify a superior design and cost savings for the capital work augmentation needed for the Ashford area of Kent in the United Kingdom

KEY POINTS

- Savings of £7.5 million
- Focus on either capital or operational savings
- Confidence in presenting the best solution to the regulator OFWAT

"Optimatics produced a system design that reduced capital costs by more than £7 million, or 13%, without compromising system performance. Significantly, capital costs were reduced by 16% in the first period until 2010, meaning even further savings when the present value of money was taken into account."

BACKGROUND

Optimatics completed a Master Plan optimization of the Ashford trunk main system for Mid Kent Water PLc in the UK, together with Halcrow Water Services Ltd., who provided a conventional baseline design solution.

The Optimatics Genetic Algorithm (OGA) was then used to provide optimized solutions for final year 2030 and also staged solutions for years 2020 and 2015.

Priority was placed on reducing operating costs including options to ensure adequate system redundancy. The optimization considered peak hour conditions and the solutions were checked using an Extended Period.

Simulation (EPS) to ensure that pumping and tank filling and emptying were also optimized.

THE PROJECT

The formulation included options to add new:

- Pipes and/or reline pipes;
- Storages or expand existing storages;
- Booster pump stations or expand existing stations; and
- Regulating valves and/or adjust existing valve settings.

KEY OUTCOMES

The Optimatics Solution eliminated nearly 35km of proposed new pipelines from the baseline solution, as well as significantly reducing the operating costs of the system.

The figures below show the difference between pipe lengths used in the baseline and the Optimatics Solution.

The Optimatics Solution also saved £4.5 million in operating costs, and improver system performance and increased system redundancy.

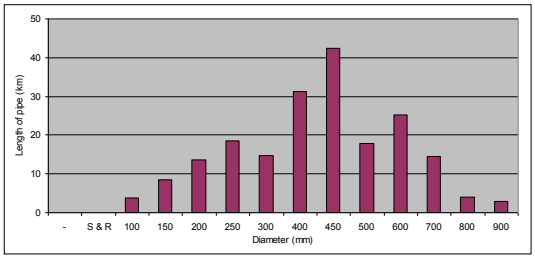
BENEFITS

The main benefit of applying the OGA analysis to Master Planning is the reduction in capital and operating costs without compromising system performance.

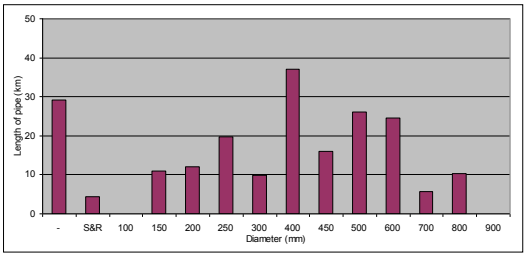
The table below shows Optimatics produced a system design that reduced capital costs by more than £7 million, or 13%, without compromising system performance. Significantly, capital costs were reduced by 16% in the first period until 2010, meaning even further savings when the present value of money was taken into account.

Comparison of capital costs and year of implementation

YEAR	CAPITAL COST		SAVING	
	HWS BASELINE SOLUTION	FINAL 2030 OGA SOLUTION		
2010	£24,912,000	£20,958,000	£3,954,000	16%
2015	£14,538,000	£13,266,000	£1,272,000	9%
2030	£18,017,000	£15,688,000	£2,329,000	13%
TOTAL	**£57,467,000**	**£49,912,000**	**£7,555,000**	**13%**



Length of each pipe diameter in the Baseline solution



Length of each pipe diameter in the Optimatics solution

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For contact details

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