

ORGANICA OFFERS SIMPLE AND EFFECTIVE CAPACITY UPGRADES OF EXISTING FACILITIES

CHALLENGE

In areas undergoing significant growth, utilities require additional wastewater infrastructure to meet demand from increased populations. In addition to pressure on sewer collection networks, the additional population growth places pressure on existing treatment facilities to increase capacity, and often improve effluent quality.

Consider a 15,000 PE SBR (Sequencing Batch Reactor) facility serving a small town in the UK. With the facility close to capacity, the local utility sought a solution that could double the existing treatment capacity while still being cost-effective, reliable, and sustainable. In addition, the utility received many complaints from nearby residents about odour issues and the site's poor aesthetics. The ideal solution would resolve the capacity limitations, require limited space in order to do so, and also address the community's concerns.

OPTIONS

The utility initially considered converting the four lane SBR process to a conventional activated sludge process by constructing final settlement tanks, a RAS (return activated sludge) system, and four additional trains (in order to double capacity). However, while this option would allow for the current system to meet the increased capacity demand, it would not solve neighbourhood issues stemming from the facility's large "psychological footprint" (unappealing aesthetics and odour issues). In fact, it would have probably exacerbated the problem! Further, the conversion to an activated sludge plant would require additional land due to the considerable physical footprint involved, including the need for a buffer zone around the facility to address odour issues and poor aesthetics.

As an alternative, the utility looked at an Organica solution. By working closely with the utility to collaboratively come up with a solution, Organica was able to design a facility that would be able to maintain the same physical footprint as the existing facility, while significantly reducing the buffer zone by eliminating the "psychological footprint" and improving the site's economics through reduced capital and operating costs.

The lower capital investment (US\$600,000 savings) and operational costs (approximately US\$200,000 annual savings) provided by Organica over the activated sludge process was projected to improve the economic return on a net present value basis by approximately US\$2,200,000 over 20 years. Further, the Organica solution would create an aesthetically-pleasing, odourless botanical garden in the community – bringing a multitude of benefits that is too difficult to quantify financially, but undoubtedly invaluable for community relations.

	SBR addition	Organica
CAPEX	US\$4,500,000	US\$3,900,000
OPEX/year	US\$520,000	US\$370,000
Footprint <small>(including buffer zone)</small>	2x increase	no addition required
NPV <small>(20 year analysis)</small>	US\$12,800,000	US\$9,700,000



ORGANICA ADVANTAGES

In contrast to the proposed SBR solution, the Organica solution offers numerous advantages:

-  **Lower operational costs**
-  **Small physical footprint**
-  **Odourless and aesthetically-pleasing**
-  **Reliable and resilient**

THE ORGANICA SOLUTION

Lower Operational Costs

In this particular application, the Organica solution offers 20% lower energy consumption and produces 30% less sludge than conventional activated sludge based systems, while providing seamless and low maintenance operation as a result of their advanced processes. The combined cumulative effect of these factors allows for Organica to decrease total operating expenses of the site by US\$160,000 in the first year alone, and up to US\$4,800,000 over a 20-year time frame.

Minimised Physical and Psychological Footprint Preserves Local Land

With Organica's small physical footprint, it became possible to double the facility's capacity in the same physical space, eliminating the need for additional land and the construction of additional reactor basins.

Moreover, the odourless and aesthetically-pleasing Organica facility was designed by Organica's own in-house architects to integrate into the local surrounding, removing the negative effects that come standard with conventional treatment solutions and allowing the utility to improve neighbourhood relations. As a result of these environmentally-friendly qualities, the buffer zone was also drastically reduced, enabling the reclamation of valuable local land.

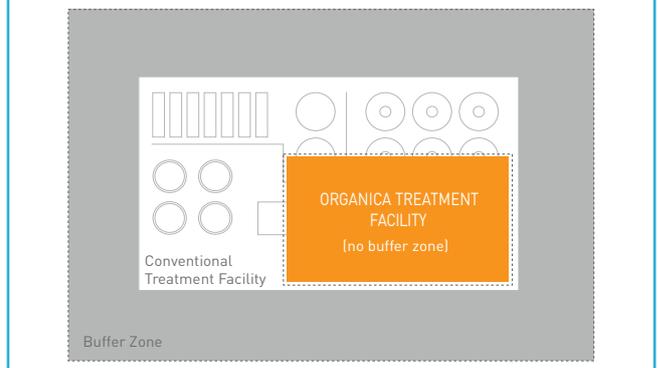
Reliable and Resilient

The Organica facility is highly resilient to changes in influent conditions, allowing the system to adapt to variable conditions more efficiently than SBR systems. This guarantees effective treatment even in cases of periodic heavy loads.

Organica Provides Lifecycle Cost Reduction



Reduced Physical Footprint



Assumptions: OPEX for both Organica and the alternative wastewater treatment option are assumed to increase at an annual rate of 3%. NPV is calculated over a 20-year time frame using a 5% discount rate.

Disclaimer: Financial estimates used are based on a proposal for a retrofit project in the UK. Images are sample displays. This case study is created for informational purposes only, and should not be considered as a quote or offer of any kind. Financial data, OPEX, CAPEX, actual footprint, components (including but not limited to water reuse functionality), etc. may vary per project depending on the actual requirements.



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