

15 September 2011

### **Gurney Environmental Ltd. Provides New Treatment Facility at Windsor Estate**

Following use of an Aero-Fac<sup>®</sup> system on Sandringham Estate for 6 years, Gurney Environmental was contacted by the Crown Estate to examine solutions for Windsor Estate. The old 1960-era filter works in the middle of the Great Park at Windsor needed replacement. Wastewater from Cumberland Lodge Conference Centre and a small housing complex created problems with intermittent flow and load due to the nature of the wastewater source. The design population was 500 pe.

Gurney Environmental designed a two cell Aero-Fac<sup>®</sup> system to treat the wastewater from Cumberland Lodge and the housing complex to meet quality suitable for discharge into Great Meadow Pond.

Gurney Environmental Ltd. offered a full design solution and worked with the Crown Estate on the delivery of the project from start to completion.

Constructed price for the Aero-Fac<sup>®</sup> system solution (approximately £350,000) was more competitive than an equivalent package plant. More importantly to the owner, the Aero-Fac<sup>®</sup> system was able to meet the concerns of intermittent flow and long-term operating and maintenance costs. Aero-Fac<sup>®</sup> simply offered a more sustainable solution.

The Aero-Fac<sup>®</sup> system at Windsor is constructed from earthen cells and eliminates the cost and complexity of sludge handling/disposal. All solids are contained within the system with the biosolids anaerobically digested on an ongoing basis. Fast track construction allowed the new facility to be built within the period from August to mid October 2010.



**Photo 2 — The low maintenance Aero-Fac<sup>®</sup> blower and diffused air aeration system.**

The Aero-Fac<sup>®</sup> system uses a combination of design elements and specialised equipment. A very low energy diffused air aeration system is used to provide the correct environment for the facultative biological process. Wind powered aeration units enhance the treatment and reduce the blower running cost, which is controlled by a DO probe to operate only as required. When in operation, the blower uses only 4.7 kw of energy.

As compared to the previous facility, the operator now has less to do than before. Operation and

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maintenance is comprised of mainly visual inspections and monthly cleaning of the DO probe. The rest of the system requires very little else in the way of ongoing maintenance. The overall operation of the facility is mostly self-operating.

The Aero-Fac<sup>®</sup> system meets today's wastewater treatment requirements through lower CAPEX, low operating costs, use of renewable energy, elimination of sludge handling/disposal, simple maintenance and operation, plus a low carbon footprint.

The Aero-Fac<sup>®</sup> system is truly a win-win-win for the Crown Estate.

For more information, see: [GurneyEnvironmental.com](http://GurneyEnvironmental.com)



**Photo 3 — The Series 3 windpowered aeration units provide zero-to-low cost aeration and optimisation of the facultative process.**

### **What is Aero-Fac<sup>®</sup>?**

Aero-Fac<sup>®</sup> is a low-energy, low carbon footprint, highly sustainable, lower cost option for wastewater treatment systems that includes both special design features and specialised equipment. The Aero-Fac<sup>®</sup> system has successfully treated a wide variety of wastewater for many years.

The benefits are accomplished with startlingly low operating cost by employing an intermittent operation diffused air system supplemented by windpowered aeration and process optimization units. The highly specialised equipment is combined with a number of unique design, construction and operation techniques. The result is "optimisation" of a purely biological process.

#### **A Fully Optimised Process**

This "optimisation" enables Aero-Fac<sup>®</sup> wastewater treatment plants to handle high loading rates and large flow/load variations — all at very low operating cost and without the use of expensive and complex conventional options or significant manpower.

#### **Self Digesting Sludge**

Long term studies prove these systems anaerobically self-digest all organics within the system with the inert materials accommodated for the life of the plant. That can be an important consideration with regulations and concerns regarding sludge disposal and handling. Aero-Fac<sup>®</sup> achieves this important benefit by ensuring

correct loadings and detention times as part of the overall design process along with optimised conditions within the system.

#### **O & M Considerations**

Equipment maintenance for a typical Aero-Fac<sup>®</sup> system is minimal, even for very large facilities, requiring mostly visual inspections annually. The system's mechanical components are robust, and there are almost no consumable parts to replace over the years. Aero-Fac<sup>®</sup> is a truly sustainable and low carbon footprint solution to wastewater processing.