



Bio-Bubble chosen for Keswick Reach Lodge Retreat

The tranquil location just north of Bassenthwaite Lake near Bewaldeth a former caravan park is undergoing redevelopment by Darwin Investments, an 11.5 million pound investment will bring the 30 acre site right up to date with 150 brand new Lodges, site leisure facilities fit for the demands of private and commercial investors.

Specialist consultants John Bratherton Park Designs were engaged to develop the scheme with the Lake District National Parks Authority on behalf of Darwin Investments producing a scheme that delivered to all parties; Advanced Aeration Ltd were tasked with regularising an historic consent to discharge to a new Bespoke Environmental Permit alongside



designing a Bio-Bubble Wastewater treatment plant that could deliver a high quality final effluent fit for a discharge directly into Scargill Beck a tributary of Blumer Beck which ultimately flows into the River Derwent. The Bio-Bubble Advanced Aeration sequenced Batch Reactor is ideal for maintaining a high quality effluent with low odour and low sludge production; the peaks and troughs typical of this type of waste catchment represent no problem for the Bio-Bubble process which will be located in a central location within the Park close by to neighbouring Lodges.

The Bio-Bubble design for an organic loading of circa 950 PE included mechanical screening of the waste followed by secondary biological treatment with final screening upon discharge, wash water for the inlet screen is captured from the final effluent discharged. Whilst a high quality of final effluent is a requirement when discharging into and around SSSI areas when the wastewater treatment is right in the centre of your business; a holiday Park, nuisance from noise or odour cannot occur.

Our bespoke Bio-Bubble design with built in dissolved oxygen monitoring throughout the process cycle, trending dissolved oxygen levels against predetermined set points, allows us to manage the energy consumption dovetailing actual energy usage along with actual organic load passed to the Bio-Bubble. Clearly one designs a treatment process to be able to cope with the worst case heavy loading one would expect to experience as a result of 100% occupancy throughout peak summer holiday season, however it is an established fact that the majority of tourist related industries, even those located within remarkably scenic areas experience troughs along with peaks.

Aeration for the process is provided by a high quality 3 lobe Aerzen blower which linked via variable speed drives and managed by Hach Lange instrumentation feeding information to be recorded by the PLC permits fine tuning of the robust true Sequenced Batch Reactor. Typically with the high hygiene standards required by today's holiday maker and the level of overall cleanliness expected the team of Lodge cleaning staff naturally use above normal domestic usage of cleaning chemicals, the robustness of the Bio-Bubble process is such that change over days of high slugs of cleaning chemical do not put process performance at risk of non compliance.

Keswick Park Lodge Retreat borders on the size of a small town with similar waste treatment needs; the Bio- Bubble as a bespoke design for the job required enough sound mitigation measures so as not to disturb the tranquillity of the early summer evenings.

Connection via a broadband link allows our process engineers to have a remote onsite view to the treatment process providing expert support to the site staff, the collection of data via this route further enforces the validity of the robust site Environmental Management system put in place to ensure compliance well within the conditions of the Environmental Permit granted by the Environment Agency for the site.



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