



## MORTARSTOWN WASTEWATER TREATMENT WORKS

Increased Treatment Capacity from 28,000 to 36,000 P.E. including Biological Nutrient Removal

**Client: Carlow County Council**

### SUMMARY:

**Value:** €1.5 million

**Status:** Complete

### Services Provided:

Detailed Design

Management of Tender Process and Evaluation

Construction Supervision

Mortarstown Wastewater Treatment Plant (WwTP) serves the Carlow conurbation with the treated effluent being discharged to the River Barrow. Due to the population growth in the town of Carlow and the necessity for improved discharge standards, it was required to upgrade the existing plant. The new plant is designed to cater for a population equivalent of 36,000 with an effluent standard of BOD 15 mg/l, Suspended Solids 25 mg/l, Total Phosphorus 1 mg/l, Ammonia 5 mg/l and Nitrate 10 mg/l. The aeration tanks were modified by the construction of internal non-structural baffle walls to create discrete anaerobic, anoxic and aerobic zones. The aerobic zone is designed to achieve nitrification, while the anoxic zone is designed to achieve denitrification. The anaerobic zone, in conjunction with the aerobic zone, is designed to achieve enhanced biological Phosphorus removal. A new fine bubble diffused air (FBDA) aeration system was installed in the aeration tanks, which provides higher energy efficiency than the previous surface aerators.

At maximum hydraulic throughput, the system caters for a design organic loading capacity of 36000 PE, corresponding to 2.55 Dry Weather Flow. The throughput of the WwTP was limited to this peak hydraulic capacity with higher flows being diverted to the storm tank. Other upgrade works were carried out, including provision of fine screening with ancilliary equipment for screenings washing, compaction and loading into disposal containers, provision of grit washing equipment, upgrading of the activated sludge recycle pumps including the provision of variable speed drives. Chemical dosing facilities were also provided to supplement biological removal of Phosphorus. The new plant came into full operation in 2004 and is operating successfully with the biological Phosphorus removal achieving a limit of 2 mg/l, and lower sludge volumes than a purely Chemical removal system.



**Nicholas O'Dwyer**  
CONSULTING ENGINEERS