

Aldi Distribution Centre

Horizontal subsurface flow (HSSF) reed beds

TERTIARY SEWAGE



Project

Aldi Distribution Centre

Location

Sawley, Derbyshire, UK

Project type

Design, construction and compliance monitoring

Wastewater type

Tertiary sewage

Treatment process

Package plant, horizontal subsurface flow (HSSF) reed beds

Need

A sustainable, low cost treatment solution was required to manage wastewater from a new 600,000 sq ft distribution centre, constructed by Aldi Stores Limited. The design basis was to treat wastewater generated by construction contractors, before receiving the full design flow and loads following the completion of the distribution centre construction phase. Ultimately, the system would need to treat a wastewater population equivalent of 250, with flows up to 50m³/d and loads of 15kg/d biochemical oxygen demand (BOD), 2kg/d ammonium (NH₄-N) and 1.5kg of total suspended solids (TSS). The discharge passes through a series of swales into a surface water pond and has to comply with the environmental permit discharge limits issued by the Environment Agency of 20mg/l BOD, 30mg/l TSS and 20mg/l NH₄.



Solution

The solution comprises a package wastewater treatment plant and a tertiary HSSF reed bed. Effluent flows by gravity from the package plant into a chamber that splits flows evenly into two HSSF reed beds. Effluent then flows under gravity through the reed bed media, where processes including filtration and biological degradation remove any remaining pollutants that are carried over from the package plant. The reed bed is planted with *Phragmites australis* (common reed). Despite poor ground conditions during construction, the reed beds were completed and commissioned in April 2018 to receive wastewater flows from the construction contractors. Construction of the distribution centre was complete in October 2019 by which time the treatment system and reed beds had matured and been fully seeded by wastewater generated during construction and were ready to receive the increased flows and blackwater from the distribution centre.





In addition to sewage treatment, reed beds are also widely used for the application of distribution centre surface water runoff. Click [here](#) for further details and case studies of reed bed installations by ARM at distribution centres.

Benefits

The installation of the tertiary treatment passive HSSF reed beds, has provided Aldi with a robust, sustainable and economic solution to their wastewater treatment needs. The HSSF reed bed technology provides the following competitive advantages over alternative solutions:

- Low capital expenditure (CAPEX) solution
- No power consumption or moving mechanical parts and low maintenance requirements
- Low operational expenditure (OPEX) and whole life costs
- Green technology adding habitat and biodiversity value to the location
- Visibly attractive
- Consistent and robust treatment performance producing high-quality effluent
- Compliance with environmental permit limits issued by the Environment Agency

Average system performance for consented parameters between June 2018 and September 2019 ^(a)

PARAMETER	UNITS	INFLUENT (RAW)	FINAL EFFLUENT ^(b)	REMOVAL (%)
Biochemical Oxygen Demand (BOD5)	mg/l	147	3.8	97
Total Suspended Solids (TSS)	mg/l	204	12	94
Ammonium (NH ₄ -N)	mg/l	68	7.3	89

(a) Number of samples (N) = 15. (b) Average final effluent of reed beds 1 and 2.