CASE STUDY

Torver

Aerated saturated vertical flow reed bed

Project
Raymond Priestley Outdoor Activity Centre

Location
Torver, Coniston Water, Cumbria

Project type
New build

Wastewater type
Primary treated, domestic waste water

Completion date
December 2012

Treatment
Aerated saturated vertical downflow

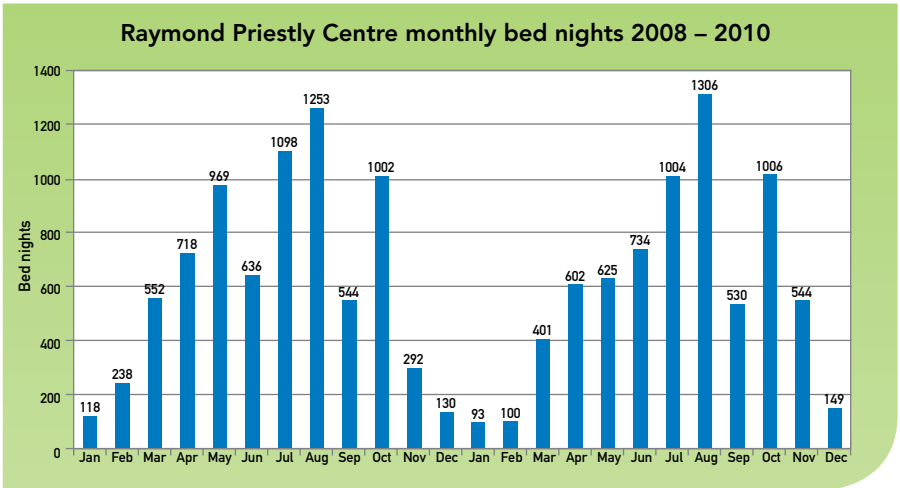
natural wastewater treatment

Need

The Raymond Priestley Centre is an outdoor activity centre owned and operated by the University of Birmingham situated on the shores of Coniston Water in the Lake District. National Park The centre provides residential courses throughout the year for Birmingham University staff and students as well as members of other academic institutions, sports clubs and corporate clients.

The relatively remote positioning of the site necessitates an offline, bespoke water management system for the treatment of sewage and grey water generated on site. Once treated, this water has to be discharged into the local environment. The existing wastewater treatment system was established in the early 1970's and comprised a septic tank and a soakaway system. The centre is popular and increasing numbers of people are attending courses each year, thus there was concern about the existing water treatment systems capacity to maintain adequate treatment.

The graph below indicates the seasonal variation in residents staying at the centre giving rise to variable wastewater loads passing forward for treatment. This requires a flexible and adaptable treatment solution.



Based on an agreed maximum residential capacity the following table indicates the design loads for treatment. The proximity of Coniston Water (20 metres) required a robust reliable treatment solution.

	FLOW (M3/DAY)	BOD LOAD (G/DAY AND MG/L)		AMMONIA LOAD (G/DAY AND MG/L)	
Average	4.97	2,068 g	416 mg/l	220g	44 mg/l
Peak	9.56	3,960 g	414 mg/l	421g	44 mg/l

CASE STUDY continued

Torver

Solution

ARM Ltd's solution was to make use of the existing treatment assets and enhance them with a Forced Bed Aerated™ vertical downflow reed bed situated between the septic tank and soakaway. Following liaison with the Environment Agency some refurbishment of the soakaway was undertaken and a 70m^2 aerated reed bed was installed to aesthetically blend into the site without affecting site activities. The aeration provides high level and consistent performance with an element of control of treatment capacity and power consumption.

Benefits

The aerated reed bed system at the Raymond Priestley Centre provides the increased level of treatment capacity required by the site as well as the flexibility and consistency to adapt to the varying loads seen throughout the year. The use of reed bed technology minimises the requirement for operational maintenance by site staff and is apposite for an Area of Outstanding Natural Beauty within the National Park.

natural wastewater treatment