

“We can’t solve problems by using the same kind of thinking we used when we created them.”

-Einstein

The Aberllefenni Modular Reed Bed



Where  Innovation Grows

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The site

Greener Waste Technology was asked to provide a 3mx10m Modular Reed Bed as a solids polishing system for an old aeration treatment unit which is now functioning as a septic tank. The site serves a very small population and as a result has very little flow at times but high solids loading even though the consent is descriptive.

The Modular Reed Bed was chosen as a suitable option given the land availability and the fact it could be installed and commissioned in two days. The reduction in H&S risk was a major driver for this project (up to 80%) and the ability to control and remove sludge was an additional bonus given the varying loads and high solids the site is exposed to.

Inlet with balancing section and sludge capture chamber:



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The results:

The Modular reed bed has several operational benefits which suit the needs of this site. The high solids loading often exceeds the loading limit of the bed (60mg/l) but the site operators are aware that the compromise on additional loading to the bed is de-sludging the system more frequently.

The team on site were happy to see how much additional de-sludging would be necessary when they pushed the limits of the solids loading to the unit. They have also established a recirc facility on the bed as in low flows ammonia can be affected by the stagnation of the water.

W/C	Sample date		COD	BOD	TSS
06 March 2017	09 March 2017	Crude	50	8	19
		post primary	676	244	314
		FE	48	12	30
13 March 2017	16 March 2017	Crude	857	305	36
		post primary	359	165	336
		FE	217	131	53
20 March 2017	23 March 2017	Crude	2215	1384	1111
		post primary	121	62	37
		FE	85	41	22
27 March 2017	30 March 2017	Crude	153	59	88
		post primary	161	59	32
		FE	99	6	23
03 April 2017	05 April 2017	Crude	1404	N/A	701
		post primary	283	283	49
		FE	200	200	46

10 April 2017	12 April 2017	Crude	838	355	273
		post primary	387	169	60
		FE	294	144	56

The final solids quality that the team are aiming to achieve is 75mg/l which the Modular Reed Bed is achieving even with the higher than expected solids loading. The other parameters on site were not a concern to the team on this occasion given the high consent but they are still monitoring the performance of the unit across the board.

Benefits include:

- Small footprint so no additional planning required, project timescales can be reduced
- Parts fabricated off site so that delivery, installation and commissioning can take place in as little as one day reducing H&S risk by 80%
- Sludge capture so no additional overtime in servicing blocked or overflowing reed beds and footprint can be smaller as most of the solids loading is captured upfront of the reed portion
- No expensive regular refurbishment costs for sludge blinding reed beds
- No downtime in treatment as media and reeds do not need replacing when sludge is removed
- Maintenance fits standard operator routines

The conclusion

The GWT range of modular reed bed processes enable a green tertiary treatment to fit into the M&E and operational expectations on a sewage treatment works making a manageable process out of a horticultural system.

The modular reed beds are prefabricated reducing H&S risks by 80% and can considerably reduce project lengths, Aberllefenni was delivered, constructed and commissioned in just two days.

As a green tertiary treatment process for solids removal in a compact space the modular reed bed is a step change in reed bed solutions offering manageability, TOTEX drivers and cost savings on new and existing assets.

The Aberllefenni project successfully demonstrated the treatment capabilities of the system and showed that sludges can be captured at the front end of the unit easily, allowing for more cost effective whole life maintenance.