



# Treatment and recycling of road waste

**:a case study**



Sweeper returns to depot...



Tips total contents...



.... into the Gritbuster



... to produce recyclable materials

Siltbuster Limited provides an innovative upgrade to ADMEC's sweeper waste treatment operations, installing a Gritbuster treatment system at the company's Birtley Depot in County Durham.

## The client

ADMEC Municipal Services Ltd is the largest independent road sweeper hire company in the north east of England, with 35 staff and an operational fleet of approximately 20 mechanical road sweepers. From its base in Birtley, ADMEC provides mechanical sweeping services for its customer base throughout the north east, which includes construction sites, housebuilders, local authorities, industrial sites and facilities management contractors.

Established in 1993, ADMEC has, in the past few years, developed a reputation for providing a complete road sweeping solution - from the hire of sweepers through to handling the road waste itself.

“ We don't dispose of any material to landfill any more, we're seeing significant operational savings and the generation of a new revenue stream with the sale of the recycled material. ”



## Treatment and recycling of road waste a case study

ADMEC first ventured into the handling of road waste a number of years ago and relied on the use of a tipping area to allow water to drain out of solids naturally and then basic water treatment. The majority of the material still ended up in landfill, often at extortionate disposal rates.

Conscious of the stringent legislation relating to the disposal of liquid waste to landfill, and the fact that even the Environment Agency's NetRegs list water as the first constituent of road sweepings, ADMEC was quick to identify things needed to change.

George Tweddle, managing director at ADMEC, explains: "We could see the need for and the opportunity to provide our customers with something different. We wanted to develop a complete service to sweep, gather and remove both the liquid and solids waste from site and bring it back to our depot for full treatment."

## Identifying a more sustainable solution

After researching the industry to identify more permanent solutions, ADMEC focused its attention on Gritbuster, a new road sweeper and gully waste treatment and recycling system developed by silt management specialists, Siltbuster Limited. Having seen the Gritbuster system in action on a Highways Agency contract in Somerset, ADMEC purchased a similar solution in January 2010, locating it at the company's Birtley Depot.

Siltbuster worked closely with ADMEC during the early stages of the project in order to utilise as much of the company's existing treatment equipment as possible to minimise costs.

## Recovery and recycling made possible through innovation

ADMEC processes on average 50 to 75 tonnes of material per day, with even higher volumes during particularly busy periods. The Gritbuster system is capable of processing up to 10 to 15 tonnes per hour and a range of feed consistencies.

Key to ADMEC's approach is the company's aim to recover and recycle as much of the material as possible, including the water, with the target of achieving a 95% recycling rate. Gritbuster is helping to turn this goal into a reality and differs from any other solution available on the market today.

This is the key to its success, as Richard Coulton, managing

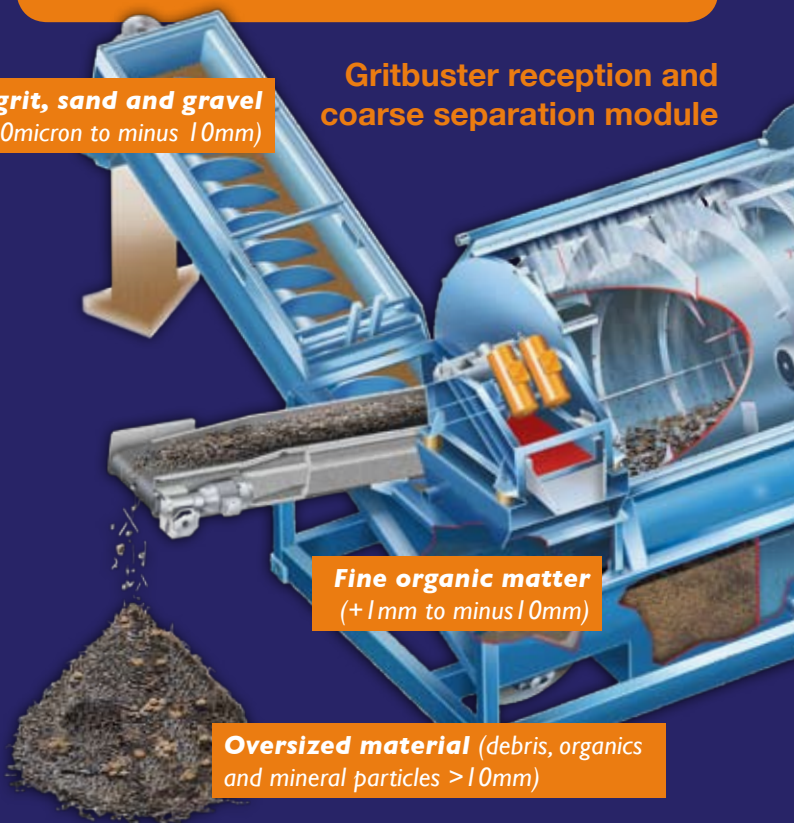


Bulk delivered road waste is also treated

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**Recoverable grit, sand and gravel**  
(typically +100micron to minus 10mm)

Gritbuster reception and coarse separation module



**Fine organic matter**  
(+1mm to minus 10mm)

**Oversized material** (debris, organics and mineral particles >10mm)

director of Siltbuster, explains: "We started with a clean sheet of paper rather than trying to adapt existing technology from the sewage treatment or quarrying industries, which are either oversized, have a huge footprint or often struggle to separate the organics from the sand.

"We've focused on cutting through the smoke and mirrors often associated with handling and treating this material, concentrating efforts on making the process compact. Being able to handle and separate the wide range of materials as they arrive, wash them, treat the water and recycle the material means that we can now offer a solution to the age old problem of what you do with sweeper waste."



**Raw material** fed straight from the truck or loaded by digger/shovel



**Oversize stone and debris**



**Dirty wash water heads to water treatment for recycling** (minus 1mm solids)



**Sand product**



**Fine organics**



**Fine solids filter cake**

## An innovative process of separation, washing and dewatering...

Road sweepings and gully arisings returning from sites are tipped straight from trucks, or by loading shovel from stockpiles, into the purpose built main reception hopper. Material is transferred by bucket wheel into a rotating trommel screen to be washed. It is then separated into an oversize (+10 mm) material and smaller (-10mm) fraction. The oversize material typically contains the larger gravel-like material and the usual road debris e.g. bottles, coke cans, broken number plates, leaves, etc. Once separated, it is conveyed out of the machine for further handling and processing.

The remaining material, containing the sand, fine organics, silt and any clay-like material falls through the trommel holes for washing. Further processing separates the fine organic matter from the coarse sand/gravel fraction, before each is separately dewatered and conveyed out of the unit as separate products. A second finer grade of sand is also produced by passing the material through an adjacent Siltbuster hydrocyclone and dewatering screen.

...which even  
recycles the water

## Treating the water...

After processing all the larger particulates, all that remains is the silt and fine solids laden water, which is treated in one of Siltbuster's trademark water treatment plants alongside, resulting in clean water for recycling and pressed fine solids filter cake.

Handling the water aspect is key to the operation as Tweddle explains: "The Gritbuster system accepts everything collected on-site and it just eats the water we bring back, so we can process everything we gather. We recycle the treated water back into the trucks, which is especially useful for dry weather sweeping operations."

ADMEC also now uses the treated water to fill its road tankers which are used to fill motorway barriers and for other grey water applications.



Treated water is recycled and used for grey water applications

## Recoverable, recyclable and re-saleable materials

Recycling of the recovered sand is in full swing, as is the recycling of the other materials recovered using the Gritbuster system, namely the organics and the filter cake, which contains the fine silts and clays removed from the washwater.

Sand material forms the bulk of the road waste and it is this recovered sand, both coarse and fine grades, which ADMEC now sells locally for a range of uses including block paving, pipebedding, concrete etc, ensuring that, wherever possible, it returns to the construction sector for re-use. Fine organics are taken off-site for composting, filter cake is used for landfill restoration and even the oversize now heads for further treatment to recover the gravel for recycling.

"As well as the coarse washed sand, the additional hydrocyclone and dewatering screen has enabled the recovery of the fine sand as another product. As we work on many housebuilding sites, we've seen a lot of fine bricklaying type sand coming in, so that's another recyclable," adds Tweddle.

From a commercial and operational perspective, the results of the Gritbuster system are clear: "We don't dispose of any material to landfill any more, we're seeing significant operational savings and the generation of a new revenue stream with the sale of the recycled material. Our sweeper drivers always have a place to tip throughout the day or night if required, which means that when the trucks are full, they can return to the yard, tip and get back out working again. Now we don't have to worry about when other tips are open or not and we have full control of our overall operations. All of these are major incentives for having the Gritbuster system in place, concludes Tweddle."



Filter presses in use at ADMEC



Filter cake (left) and sand await recycling

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