

# HOW TO DEAL WITH REED BED DISPOSAL

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INTRODUCTION

Reed beds are a relatively new addition to the water filtration process. Where they have been used in the water treatment process before to help the filtration process, they are now being used more intensively to remove products used in the filtration process for reuse elsewhere.

The progression of reed bed usage is a great sign that the water industry is taking its part in looking after the environment and improving its processes seriously. The reed beds themselves are an organic way to deal with the waste produced in the filtration process but they are also a vital habitat. Natural reed beds are in decline so it is a positive development to see that their uses are now increasing the land dedicated to this habitat - natural or man made.

However, as with all industries, there are still a few problems to resolve in the reed bed system. Though each reed bed is likely to function for around 10 years, they still need to be cleared and rebuilt to start the filtration processes again. This means that the waste produced still needs to be removed and disposed of in a safe and efficient manner.

So, how should you deal with reed bed disposal?



# WHAT IS THE PURPOSE OF REED BED FILTRATION?

The main purpose of reed bed disposal is to separate the sludge created in the water filtration process. The reeds themselves are integral because they use the water to grow, leaving the sludge to form a mineral rich layer on top.

## Where Does the Sludge Come From?

During the water treatment process, ferric sulphate is added to the water. The magnetic properties of the ferric sulphate attract the tiny particles of dirt remaining in the water. These particles are attracted together and form a polymer. This is called floc.

The floc sinks to the bottom of the water filtration tank where it forms a layer of sludge. This sludge is then drawn off as the water above continues on to be filtered through sand and finally chlorinated to make it safe to drink.

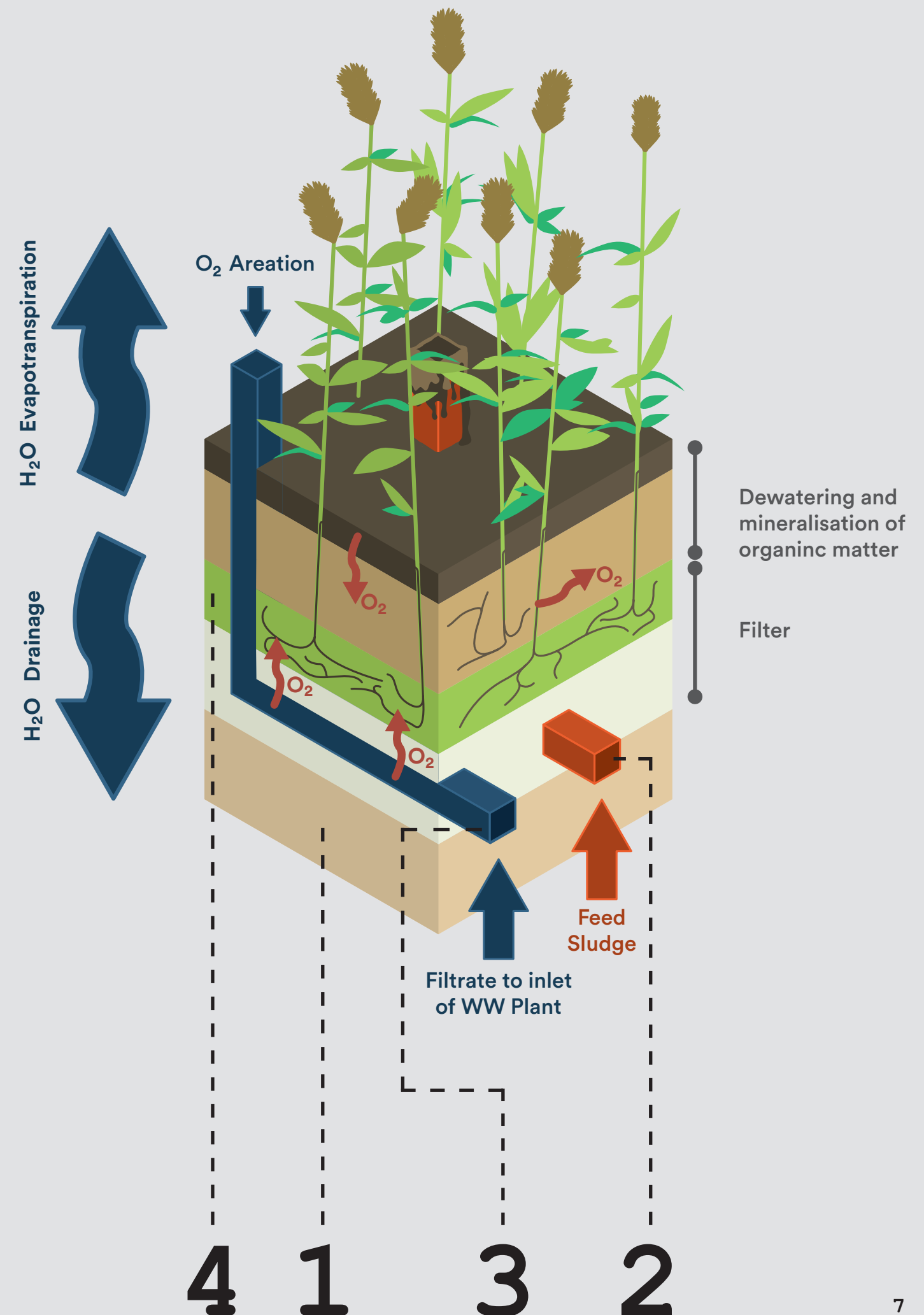
The sludge is then fed into a reed bed.





# HOW DOES A REED BED FILTRATION SYSTEM WORK?

- 1 A layer of gravel and small stones are laid at the bottom of the reed bed. This is to allow excess water to run down and through to be treated again.
  - 2 A system of pipes feeds the sludge into the reed bed. The purpose is to place new sludge on top while previous layers from below.
  - 3 Another system of pipes aerates the reed beds with  $O_2$ . This encourages healthy growth of the reeds and a variety of microorganism
  - 4 A mineral rich layer or organic matter is created. This feeds the roots of the reeds while they use up the water, safely filtering it before it is naturally evaporated from the leaves.
- 
- Over 10 years or so, the reed beds will fill up and will eventually need clearing to start the whole process over again.





# WHAT ARE THE WASTE PRODUCTS FROM REED BED FILTRATION?

When the reed beds are cleared there are two main waste products: the mineral rich layer formed of the reduced sludge and the gravel and stones that formed the lower layer.

## How to Deal with the Waste Sludge

The summer is the perfect time to change the material in your reed beds - especially if there is a long hot and dry spell as this will reduce the amount of water in the sludge layers even further to form a cake.

Once the sludge has caked into a layer and most of the water has evaporated, it is easy to dig out the sludge layer and use normal skips to take it away. In some circumstances, you may need to use a series of smaller trucks to navigate between the reed beds and a safe location for your skip but with a bit of logistical magic, this is a very practical solution.

## How to Deal with Waste Gravel and Stones

The gravel and stones may present a little more complication. For the most part, the gravel and stones are not regarded as hazardous waste and can be reused elsewhere. However, there is a chance that the gravel may be hazardous so you must always use a waste analysis company to test your stone.

Either way, a series of smaller skips is likely to be your best solution for disposing of your waste. However, if your waste is hazardous, you must ensure that the waste carrier has the proper consignment order and permissions before they take the waste away.



# HOW CAN THIS WASTE BE REUSED ELSEWHERE?

One of the main principles of the duty of care is that you should always try to find the most environmentally friendly way to dispose of your waste. In many cases, this means finding an appropriate way to reuse your waste or to pass it on to someone else who can use it themselves.

## Can You Reuse Sludge From Reed Beds?

Sludge can be reused however it must go through a number of different processes before it is suitable for use elsewhere. This procedure is not always straightforward but with our network of providers, we can offer a few different solutions based on our client's motivation.

Testing the sludge is absolutely crucial and this will flag any contaminants such as heavy metals. Though these contaminants can be removed in most cases this is not reasonably practical or commercially viable due to costs meaning that this waste must go to hazardous landfill.

However, this is not the only route that waste type can take. With the right treatment and procedures it is possible to reuse parts of the material.

If you were to reuse the sludge, typically, you must first dewater it and remove any reed roots. Dewatering makes the sludge easier to handle later on and reduces the weight significantly. The roots can be treated as a green waste which could be taken to an anaerobic digestion plant to be composted.

The sludge has a naturally high mineral content as it contains the waste ferric sulphate used ...

...in the water treatment process. Though sludge isn't the most attractive by-product, as the reeds have shown, the mineral content offers the building materials all plants require to grow and thrive. This is what makes the sludge an excellent candidate for reuse.

Many farmers looking to improve their soil quality will be interested in taking your waste sludge off your hands. Once it is dried out thoroughly, the remaining product can be spread across the land very easily.

It is important to note that to get it to the state where a farmer can take it does cost and it may be more cost-effective to go to landfill or hazardous landfill if it is contaminated. From our experience, the cost of the transport to take the waste between various treatments is where the economics just don't work for most businesses.

## Can You Reuse Sludge From Reed Beds?

If your stone is deemed non-hazardous, you can safely reuse it but you should not put it back into the reed bed itself. There are a few common uses for inert waste stone including:

- Use on building sites
- Pipe bedding
- Footpaths
- Driveways
- Borders
- Roofing







# REBUILDING THE REED BED



Once all the waste has been removed, the whole process begins again.

New gravel and stones are added to the reed bed and the pipes begin to fill the rest of the space with the sludge to provide the new reeds with a suitable environment.

A water treatment facility with multiple reed beds will usually stagger the creation of the new beds so that there is always an outlet for the sludge and each bed is given ample time to recover between changes. In fact, this process is completely sustainable as all the materials are viable for reuse after disposal and are easy to source as a reused product.

This is a great case for showing why we shouldn't just think in terms of waste management but also in terms of resource management. Even a pile of sludge can have a value elsewhere!



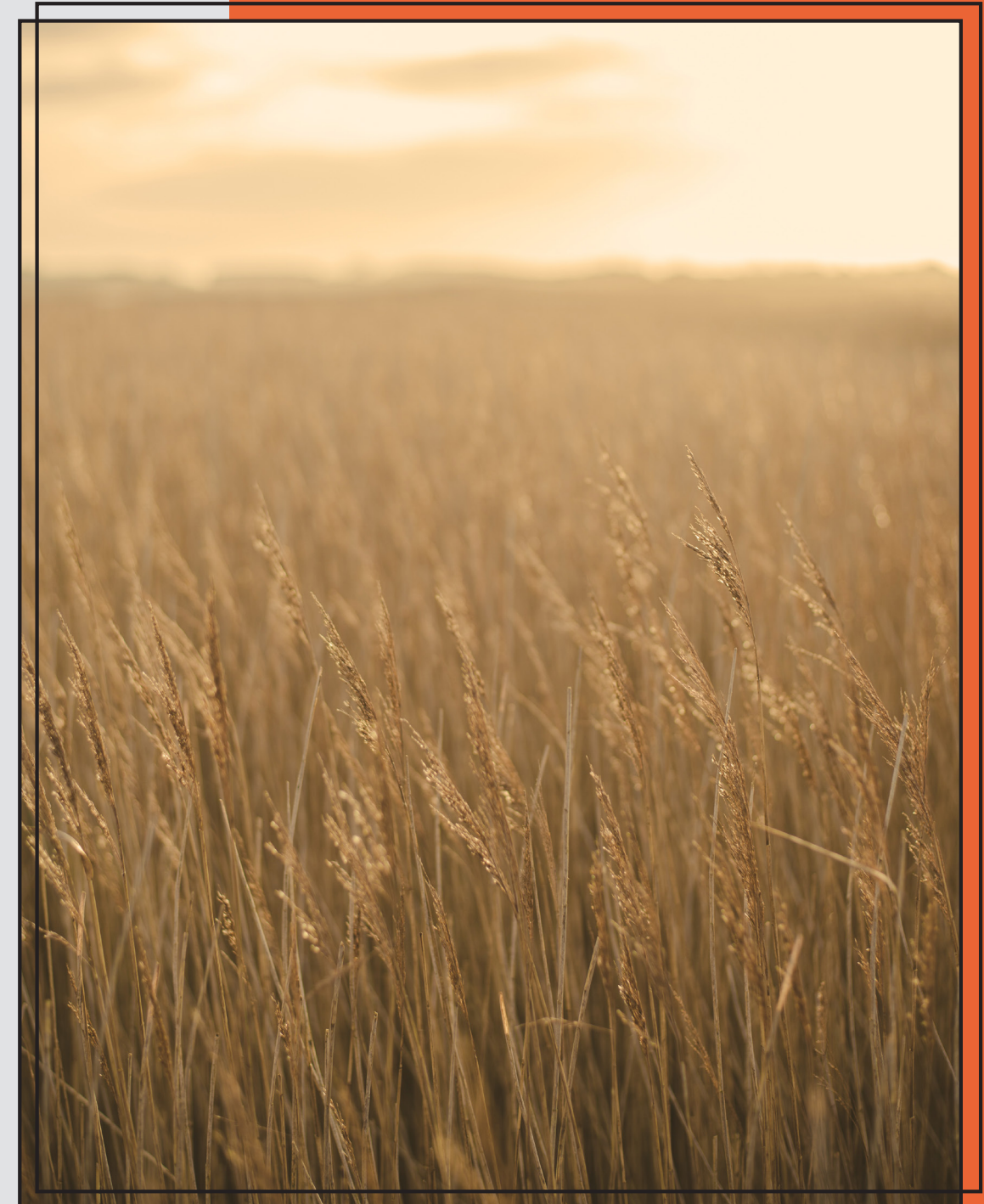



# WHAT CAN WASTESURE DO FOR YOU?

While reed beds are relatively easy to maintain, disposing of an old bed and starting again can be a challenge, especially if you don't already have a network that can absorb the materials. This is where WasteSURE can help.

We pride ourselves on having a wide network of waste carriers and can source other businesses who may benefit from your waste products. This network is also beneficial because it means that we can take your waste away but we can also supply the aggregate you need to rebuild your reed bed.

As reed beds are not usually built with large skips in mind, we are able to provide simple logistical solutions to ensure that your bed is cleared within a short window of opportunity. We will do whatever it takes to make sure that the project is completed quickly and efficiently and will work tirelessly to find the right solution for you.



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We Do  
Things  
Differently  
Here