

Wastewater Treatment for Self-Build Projects



“Self-building gives you the opportunity to get more bang for your buck: this is undoubtedly the best way to create a high-quality home that’s tailored to your family’s needs at a cost-effective price.”

– Chris Bates, Editor, Build It.

While embarking on a self-build project can be a lot of fun it can be quite daunting as well. It’s vital to work through the process systematically to make sure nothing gets missed. An area that’s often neglected until the project is well underway is wastewater treatment. But if you are a homeowner, it is your responsibility to make sure that you have made appropriate arrangements for wastewater treatment and discharge. You don’t want the local authorities knocking on your doorstep. The legal responsibility of choosing the right wastewater system, making sure installation is done properly and maintenance of the system rests with the homeowner. Do bear in mind that waste water systems need to be checked and serviced regularly so that they don’t pose a serious health or pollution hazard. But before investing in a wastewater system, do thorough research on the waste water system most suited for your dream house.

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6 STEP SELF-BUILD GUIDE

We have put together a useful 6-step self build guide that you could use before you embark on your project.

STEP 1 Secure Plot

With people choosing to live off mains is increasing rapidly, it is important to know what your options are as early in the process as possible. Nearly 25% of self-build plots are 'off water mains'. If you're choosing between multiple plots, don't be put off by a lack of connection to mains drainage. An ever-increasing number of houses in the UK successfully rely on independent wastewater treatment systems and technology has come a long way since the days of traditional cesspits and septic tanks.

Questions to ask

- ✓ Is the plot rural or urban?
- ✓ Is the plot connected to mains drainage?
- ✓ Will the plot have a mains water connection?
- ✓ Is the plot near a river or stream?
- ✓ Which system will meet your needs, and local authority requirements, the best? Is your plot connected to mains water?
- ✓ What do you want to use your rainwater for?
- ✓ Which kind of system will meet your needs the best?
- ✓ Will a gravity or direct system best meet the plot's needs?

STEP 2 Designing your dream

You've decided to go ahead with a self-build project including an independent water treatment system – congratulations! You are part of a growing movement in the UK, breaking away from the constraints of existing infrastructure. A significant, and growing, number of houses in the UK successfully rely on independent wastewater treatment and rainwater harvesting systems. Don't be intimidated by the decision to 'go it alone'. With a wealth of information at your fingertips, going 'off-mains' can be done simply and without any extra stress. And with all the other pressures a self-build project brings, less stress is a good thing!

Questions to ask

- ✓ How many bedrooms will your property have?
- ✓ Is your property to be used as a holiday home?
- ✓ Is your property to be used as a guest-house?
- ✓ What would be the ideal stage to install this type of equipment?
- ✓ What is the total area of roof space for capturing rainfall?
- ✓ What are the implications of differing systems on your build?
- ✓ What would be the ideal stage of your project to install this type of equipment?

STEP 3 Architect Appointed

Once you've appointed an architect you should discuss your

wastewater treatment and rainwater harvesting requirements with them in depth. Once you've decided upon a system, there are a number of sources you may need to consult before proceeding:

1. Your local environmental agency (EA, SEPA, EPA, NRW or DoE NI)
2. Environment Agency Pollution Prevention Guidelines PPG4
3. British Standards 6297
4. European Standards BS EN12566
5. The Building Regulations 2010
6. British Water Flows and Loads – 4

Questions to ask

- ✓ Has a percolation test been carried out to determine ground conditions?
- ✓ How far in advance do I need to order equipment?
- ✓ Can large trucks gain access to the site?
- ✓ Will I have suitable unloading equipment available?
- ✓ What are the running costs of comparable wastewater treatment and rainwater harvesting systems?

STEP 4 Planning approved

Once the relevant local authorities have approved your self-build plans, a building schedule can be put in place. This is the time to start thinking about procuring the necessary equipment and materials for the build. Wastewater treatment and rainwater harvesting are a crucial part of your project, so it's worth giving the choice

6 STEP SELF-BUILD GUIDE

of system careful consideration. You should consider installing your wastewater plant during the building phase of your project, especially if you're intending to live on site for the duration of the project. Plants can be connected to your temporary accommodation until your new home is complete.

Questions to ask

- ✓ Have I fully discussed my options with my architect?
- ✓ What is my predicted start date?
- ✓ What are the implications of differing systems on your build?
- ✓ What would be the ideal stage to install the equipment?
- ✓ Have I received the necessary wastewater treatment

approvals from all relevant authorities and agencies?

- ✓ What are the installation costs of equipment?
- ✓ What are the on-going operation and maintenance costs?
- ✓ Have I arranged for a site visit from a sewage treatment plant manufacturer to discuss benefits and USP's of their system?

STEP 5 Builder selected

Now that you have appointed a building contractor, the real excitement and activity begins! Local builders have immense practical knowledge, so be sure to take advantage of this invaluable source of information.

Questions to ask

- ✓ Who will buy these products?
- ✓ What will be the best stage of the project to install this equipment?
- ✓ Have you discussed the ideal location for optimum plant performance with your builder?
- ✓ Will your contractor be able to offload products on your behalf?

STEP 6 Construction started

Congratulations! Your self-build is finally under construction. The weeks, months and possibly even years of planning have all been building up to this point.



Frequently Asked Questions



Can I use normal detergents and cleaners and will they affect my plant's performance?

Yes, normal domestic use of these products is acceptable to the plant biology. If higher than normal quantities are expected, you should contact your nearest supplier before purchase.

How much electricity does the plant consume?

Septic Tanks do not utilise any power. 6 population plants utilise 60-80 watts, similar to that of a light bulb.

Will paper towels, sanitary towels, etc, clog up my system?

Sanitary towels and similar non-biodegradable products should not be flushed into any wastewater treatment products.

Does the plant make a noise?

Modern compressors are virtually silent, contained within housings further reducing noise levels.

What can I do if my site fails the 'percolation test' and I do not have a watercourse to discharge into?

There is provision in the Building Regulations to construct an artificial 'soakaway mound', although this will need to be properly

designed by a competent engineer or specialist drainage consultant. Another option is to pump the treated wastewater to a location with suitable porosity or available surface water discharge point. Pumping to a main sewer connection may also be an option.

What distance from the property does the plant need to be?

A minimum of 7m should be used, increasing to 25m if serving more than one building. Some local authorities will permit significantly closer installations if it is as far as is practically possible. Your Building Control Officer should always be consulted early in the planning stage regarding the location of the treatment plant.

What is the difference between a silage tank, a septic tank and a treatment plant?

A silage tank or cesspit collects and stores all of the raw wastewater and has to be emptied when full. These are not permitted in Scotland. A septic tank physically separates the solids from the liquids; the liquid is allowed to flow out of the tank, usually for dispersal by a network of underground perforated pipes called a soakaway. A treatment plant works like a septic tank but has an additional stage to treat the liquid removing the dissolved constituents. The quality is then sufficient for direct discharge to surface waters.

Will a soakaway drainage system become blocked up after several years of use?

If the soakaway system is laid properly according to the percolation test and BS 6297:2007, it will

last for many years. Organic matter can eventually build up with the distribution network, so it is therefore important to recognise that a soakaway system will not last forever. Proper maintenance and desludging of the tank is the most important factor in maximising the life of the soakaway.

My septic tank/treatment plant smells. Why is this happening?

The most common reasons are incorrect venting arrangement, a lack of maintenance or incorrect operation. The wastewater tank as well as the drainage pipes need to be sealed, venting to an appropriate dispersal point. This includes sealing all access points in the drainage pipes and u-bends on pipes in the dwelling. Maintenance and correct operation (use of detergents etc.) is vital to ensure that the system is physically and biologically treating the wastewater correctly.

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