



low-impact water supply



what is it?

Over 70% of the Earth's surface is water. From space we are the Blue Planet. However, only 2.5% of this is fresh water, and two thirds of that is locked up in glaciers and ice caps. The remaining third is distributed between lakes, wetlands, groundwater, rivers, soil moisture and atmospheric water. That's too precious to be throwing away to pollution, habitat encroachment and climate change pressures.

Most tap water is pumped from groundwater, rivers or lakes and is filtered and sterilised to remove contaminants (mostly from sewage and agriculture) and sometimes medicated with fluoride. Then it is pumped and stored for delivery to our homes. This process is carried out daily by local authorities across the UK, and yet we seldom give it much thought. A more sustainable water supply would start with clean water, avoiding chemicals for sterilisation or medication, and relying on gravity to be delivered to our homes. However, the management of municipal water supplies and the health of the landscape on which our rain falls and through which our water flows, is beyond our direct control. Thus we'll look at more modest contributions we can make towards catchment protection and diversification of our own water supply.



Water sources that don't need electricity to pump: hand-drawn groundwater abstraction; gravity-fed/hand-drawn surface water abstraction; rain.

what are the benefits?

Water provides us with the basis of all life on Earth. Everything that lives and breathes relies upon water for its existence.

In recent decades we've seen water shortages due to droughts, deterioration of water storage within our catchments and water quality in our groundwaters, rivers and lakes. Paradoxically, storms also bring water shortages from time to time because of our dependence on electricity for pumping water to our municipal treatment systems and/or our homes.

There are many varied benefits from moving towards a low-impact water supply. The benefit of diversifying our water supply is that we can build greater resilience into our lifestyles; of adopting water conservation measures is that we reduce the total demand for pumping and chemicals at the municipal level; of protecting our local catchments from pollution and hydrological extremes is that we can all have cleaner, healthier water to drink; and of reducing our water footprint is greater health and wellbeing of those who are affected by our lifestyles and purchasing habits.

what can I do?

We can support organisations that encourage tree planting in our uplands, preservation of our wetlands and promotion of agricultural practices that encourage good soil health. Composting in our gardens builds humic material in our soils and helps to provide greater water storage in our soils. On an individual house basis, we can create rain-gardens or mini SUDS units to contain heavy rainfall and gradually reintroduce it into the ground via percolation from the system base. This reduces the pressure on mains drainage networks and protects rivers and streams from hydraulic shock loading, flood/drought cycles and pollution. If we manage land, we can introduce woodlands, hedgerows, wetlands or ponds to contain heavy rainfall and release it slowly into the wider system, and build soil humus content and thus provide additional catchment storage and water filtration.

Get involved with the Rivers Trust to ensure that your catchment area is cared for to keep your drinking water clean. It's important to ensure that your own sewage system is working well so that you are protecting the underlying groundwater.

When it comes to our own water supply, we can explore ways to diversify our sources to have greater resilience in an uncertain future. Without a ready supply of electricity to filter out contaminants from sewage and agriculture, our water supplies can become unsafe to drink. Without electricity to pump it, our taps quickly run

low-impact water supply



lowimpact.org

dry. Council mains supply, group scheme supply and private wells on site are all relatively common water sources. These all typically require pumping to deliver water to our taps, and often require filtration and sterilisation to remove contaminants.

Although surface water abstraction from rivers or lakes is relatively common on a municipal scale, it is less common for individual homes. If you live near a clean river or stream, this may be ideal, but you can't take for granted that it will be safe to drink. With a biosand filter, it may be possible to safely provide your primary supply or even a backup in the event of an interruption to your existing source. Ideally set up your system to run using gravity rather than needing to be pumped.

Rain harvesting is growing in popularity. The three main elements are the catchment (roof), supply (gutters) and storage (tank / chamber). If these are carefully designed you can safely capture and use harvested rain water to augment or replace your mains supply. Filtration may be required if you want to use it as drinking water. Rainwater hasn't had contact with the earth, being filtered and picking up minerals, so it may not be as healthy for ongoing use, so research this further if you want to use it as your only supply.

If you can't obtain your supply by gravity, an option is a wind pump, for groundwater or surface water access; or a ram pump, with rivers or streams where the flowing water provides the energy to pump a small volume of water to a header tank.

Don't use bottled water: imported bottled water has a carbon footprint about 300 times that of tap water, and c.14 billion recyclable plastic bottles end up in landfill every year in the UK.

On-site water storage may best be achieved in an additional cistern if you experience regular short-term power supply interruptions. Alternatively, an outside tank or pond may provide storage for occasional use.

Conservation of water isn't strictly a supply source, yet if we're frugal with water use, we can reduce our ecological footprint by cutting back on electricity for pumping and abstraction from waterways. There are many ways to conserve water, such as low-water-use taps and washing machines, summer watering with washing-up water, turning off taps when brushing teeth etc. We can install low-flush toilets or waterless urinals to further reduce our water consumption (or for



A wind pump – a way of getting water to where you want it without using electricity.

source separation of urine to use as a fertiliser rather than adding to the nutrient load on our local municipal treatment system. Grey water recycling is an option, but rainwater may be preferable to filtered grey water because it typically involves less energy and we have an abundance of rain.

While water (and electricity) is abundant it can be difficult to justify water conservation – but as weather patterns become more extreme, some are faced with lugging water from central depots; then conservation suddenly becomes important when each litre is carried by hand in a Jerrycan.

However, domestic use accounts for a relatively small amount of our water footprint (the water used to produce the goods and services we buy). A quarter of the world's agricultural land is in water-stressed areas that are spreading as climate change takes its toll. When we buy almonds, avocados, pistachios, wine and cotton we often put additional pressure on areas that are suffering from drought conditions. Consider water-stressed areas when shopping and endeavour to stop buying water-intensive crops or products from such regions of the globe. This is another good reason to buy local and grow our own food.

resources

- see lowimpact.org/water for more info, courses, links & books, including:
- Brian Skinner, *Small-scale Water Supply*
- George Annandale, *Quenching the Thirst*
- Stu Campbell, *the Home Water Supply*
- wras.co.uk: water regulations advisory scheme
- waterfootprint.org: advancing smart water use
- biosandfilters.info: biosand filters information

Feel free to upload, print and distribute this sheet as you see fit. 220+ topics on our website, each with introduction, books, courses, products, services, magazines, links, advice, articles, videos and tutorials.

Let's build a sustainable, non-corporate system.

facebook.com/lowimpactorg

Lowimpact.org

twitter.com/lowimpactorg

Registered in England. Company Ltd. by Guarantee no: 420502