

installation of a borehole. In some cases, the council has covered the full cost of installation.

Examples of funders and methods include: national lottery, web-based crowd sourcing, volunteer time, match-funding from the local council. As with all funding, it is best to look for several sources of small funding pots locally rather than applying to a single, large funding call-out. See NAS Funding Factsheet.

Justify your application for funding by explaining to funders that the installation of a borehole reduces the need for mains water, is environmentally friendly, improves your organisation's financial and environmental sustainability, brings a sense of community.

Other points to take into consideration

Header tanks: You will require a header tank to store freshly pumped groundwater ready for plotters to use. Only pump-up the amount of water you can store, because discharging excess/unwanted groundwater back into water courses and rivers means you will have to adhere to more regulations; can bring additional health and safety and environmental pollution risks; and of course is wasteful.

Waste spoil from drilling: Depending on the rock and soil types below your allotment site, there can be large amounts of earth brought to the surface by the drilling process. Carefully consider how you will dispose of this mound, which can quickly pile up as the earthworks take place. For example it could be

heavy clay, which you will not want ending up on one person's plot. Think ahead and plan whether to retain spoil on-site or have it removed as waste (and think carefully about who/how it is moved and budget for any associated costs).

Pump house: How will you house the borehole and pump? This could be a simple shed or a metal storage container.

Drinking water: Water for irrigating plants does not need to be suitable (potable) for drinking. However, some (but not all) groundwater is potable. If you want your allotment site groundwater to be used as drinking water do bear in mind that you will have to adhere to specific regulations, enforcement, testing (which is likely to incur a charge), and undertake risk assessments. If you chose to go ahead, the regulations which apply depend upon how much water you extract per day. Your local council environmental health department should be your first point of contact if you are considering this option.

Water table level It is rare for a borehole to completely run out of water but the deeper the borehole the better. This is because the water table can drop. For example in the extreme weather conditions of 2022, some water tables dropped several metres, therefore, climate change may mean shallow boreholes will no longer be sufficient.

Combined mains water and groundwater

In theory it is possible to connect both mains water and groundwater to one water pipe system serving all plots on a site. This is, however, expensive to undertake.

Finally, don't forget to tell your water company that you no longer require mains water and ask for a final account!

Allotment borehole case studies

Accompanying this leaflet is a list of case studies useful for councils and associations considering an allotment borehole. This is available on the NAS website.

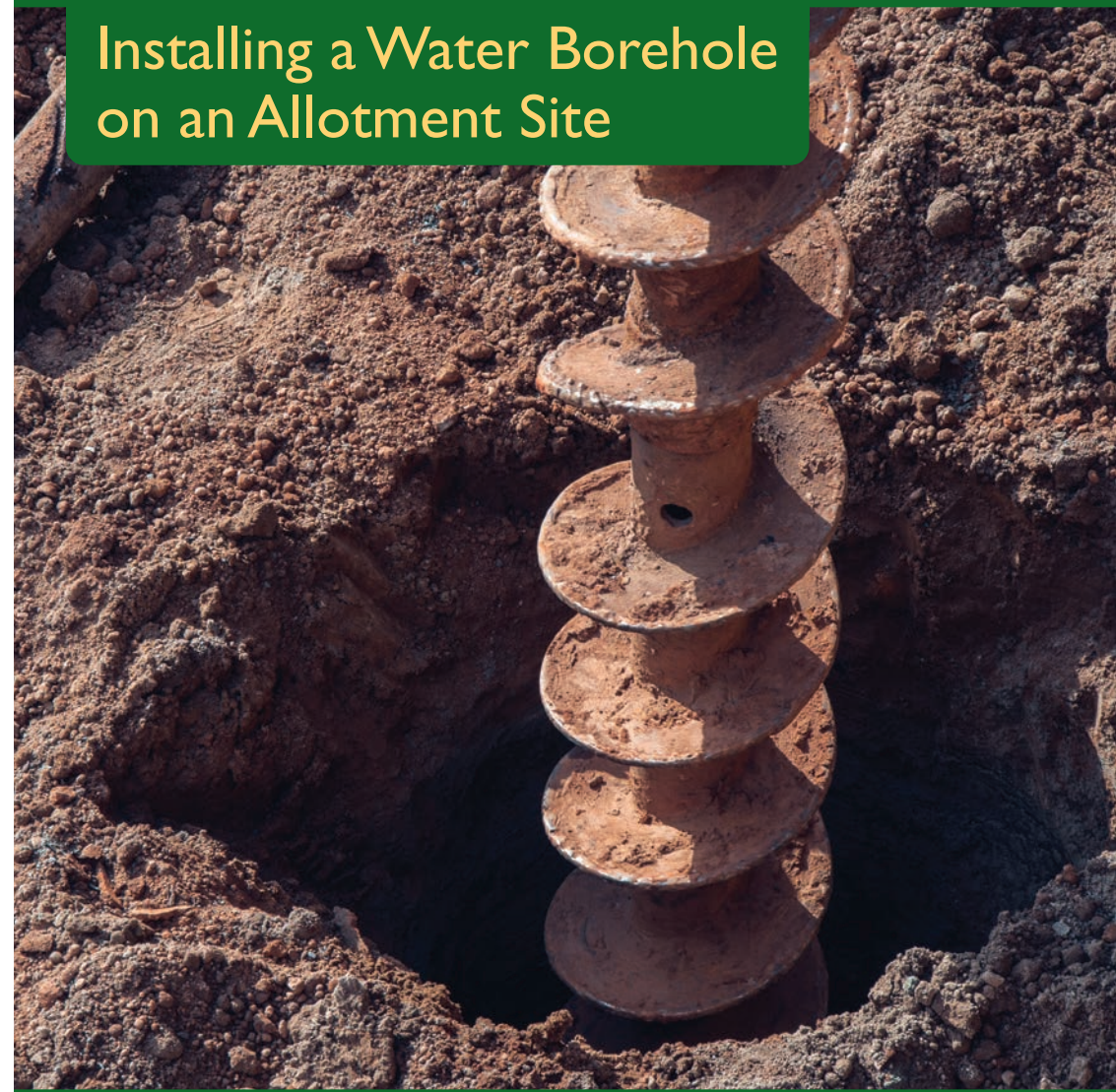
Sources of further information

The British Drilling Association
www.britishdrillingassociation.co.uk/

**Become a member of
The National Allotment Society**

Membership of The National Allotment Society comes with a raft of benefits, from discounts on horticultural products through to initial legal advice and horticultural expertise. To become a member visit www.nsalg.org.uk or call **01536 266576**.

O'Dell House, Hunters Road, Corby, Northamptonshire NN17 5JE
T: 01536 266576 • E: natsoc@nsalg.org.uk • www.nsalg.org.uk



The supply of mains water to allotment plots is a major financial cost. Instead, you can access a free groundwater supply by sinking a borehole on the allotment site.

Water abstraction

For most self-managed allotment associations and many councils, the annual cost of mains water is the major financial cost of running an allotment site. Many associations and councils find that they are unable to undertake any projects or improvements to a site because the water bill sucks up all the funds. Of course, some sites have no mains water at all which can put the hard labour of plotters at risk even when rainwater harvesting is practiced.

An alternative approach to a mains water supply is taking water from below the ground of the allotment site ("groundwater"). This process is called "water abstraction". Although water abstraction is expensive to set up, many councils and associations have now done so or are planning to. The result is free water for all plotters. Maintenance costs are lower than the ongoing cost of mains water.

Water-bearing land

The below-ground rocks (geology) in the local area will determine whether the allotment site can have a borehole for groundwater abstraction. Some geology prevents groundwater availability, therefore, it is not a given fact that every allotment site can have a borehole. Therefore, the first step is to investigate whether the allotment site's geology is suitable for a borehole.

Borehole soil test ("test-drill")

This is an initial one-off survey to establish whether the site can have a borehole or not. A test-drill is undertaken by a reputable geological surveying company which specialises in boreholes. The test assesses the layers of rock and soil down to a deep level, to establish the types of rock and whether ground water is present and accessible for pumping. At this time, the groundwater quality should also be tested, in case of any contamination.

Although there are free datasets available online which show the results of previous borehole testing in your area, these results are specific to that soil test session, may not be deep enough, and are not specific to the allotment site, therefore, should not be taken as absolute. Charges for borehole soil testing can be either a one-off charge or on a "no water, no fee" basis.

How much groundwater you may take

England You may abstract up to 20 cubic metres of groundwater per day. This is 20,000 litres of groundwater and, in conjunction with rain water harvesting, likely to be sufficient for most allotment sites. Amounts above this level require an Abstraction Order, which you must apply for from the Environment Agency. Because of numerous calls upon the water table and the negative impact that large-scale industrial water abstraction can have on the environment, Abstraction Orders can be difficult to have granted in England. NAS recommends aiming to abstract up to 20 cubic metres per day only, as Abstraction Orders are unlikely to be granted. If you do plan to abstract more than 20 cubic metres per day you will need to apply to the Environment Agency for permission for both test drilling and abstraction. Planning permission is not required.

Scotland You may abstract up to 10 cubic metres of groundwater per day. This is 10,000 litres and, in conjunction with rain water harvesting, likely to be sufficient for most allotment sites in Scotland, where sites are generally smaller than in other parts of the UK. You must comply with certain general binding rules (GBRs) laid down by the Scottish Environmental Protection Agency (SEPA). Amounts above this level require Registration with SEPA; amounts over 50 cubic metres require an Abstraction License from SEPA. Planning permission is not required.

Wales You may abstract up to 20 cubic metres of groundwater per day. This is 20,000 litres of groundwater and, in conjunction with rain water harvesting, likely to be sufficient for most allotment sites. Amounts above this level will require a full Abstraction Licence from Natural Resources Wales (Cyfoeth Naturiol Cymru) in order to abstract water over a period of 28 days or more. Planning permission is not required.



Planning permission

This is not required for water abstraction itself, however, if you plan to build a storage unit or building for your generator, or if you plan to install a wind turbine to power your pump, you may need planning permission for these additions. Check with your local council before applying for any funding or undertaking any works.

Landowner permission

Associations operating under a devolved management lease should seek permission to test drill and abstract water from the council/landowner. Ensure you have a clear plan of what your association does (and does not) want to do, along with majority agreement from plotters onsite, before approaching your council/landowner. Councils considering the approval of boreholes on their allotment sites should view boreholes as part of climate change mitigation and adaptation by local communities who are responsible for the management of local assets.

Responsibilities after installation

Allotment associations should ensure that who holds responsibility for the management and maintenance of a borehole on the site is clearly stated in the Lease or any other document by which they agree to manage the allotment site.

The following are required for the ongoing management of a borehole, whether the site is managed directly by a council or by an allotment association via a lease: maintenance, adhering to extraction regulations (above), and making safe the borehole if no longer required. The following should be taken into account:

- Maintenance of equipment (e.g. generator or wind turbine); purchase and safe storage of fuel (if using a generator); training for anyone using equipment and goods associated with the abstraction; keeping up to date with the regulations; record keeping, e.g. how much water is abstracted.
- To keep water abstraction going, ensure there is an income stream to pay for ongoing abstraction. For instance, is fuel for a generator coming from the rental income, or is a new income stream needed?

Although this may seem like a lot of work there will no longer be a mains water bill to pay for the site, so don't forget to subtract this from the balance sheet when calculating the costs and weighing up the benefits of a borehole for the allotment site.

Minimum requirements for an Allotment Borehole

Test-drill and drilling the borehole. To be undertaken by a reputable and experienced drilling company. The British Drilling Association has a list of accredited members on its website, see *Sources of Further Information*.

Purchase and installation of borehole water pump. This is a specialist piece of equipment. The size and power will depend on the depth of the borehole, as will the water pressure you can obtain. 4 or 5 Bars of water pressure are achievable but not guaranteed. Ensure the company chosen can advise on all of this.

Purchase and installation of what you choose to power the pump with. Water needs to be pumped from the borehole to header tanks for storage. You have the option of pumping by hand, using energy generated from solar panels or a wind turbine, or from a generator. Sites which use solar power tell us that this works well because the sun is strongest in summer when most watering is required and that even shadier days provide sufficient power. However, if your site has a lot of gardeners who water late in the day, bear in mind that the header tanks will need filled before the sun begins to set.

Installation of electricals and final connection. To be undertaken by a suitably qualified electrician experienced in borehole connection (including testing).

Purchase of header tank(s). How many and the amount of storage is your choice. Most sites choose to rely on gravity to move water from the header tanks (via water pipes) to plot locations and this pressure is usually sufficient. If you want greater pressure you can raise the height of the water tanks, but remember to plan and budget for this.

Water pipes. If you do not already have a water supply on your site you will need to plan and budget for the installation of water pipes from the header tanks to plot locations. There are various options for supplying water to plots (e.g. how many plots per tap or water trough) as well as consideration for users with less physical ability. NAS has a series of leaflets about water.

Grant fundraising

NAS has seen examples of both local councils and allotment associations using a variety of funding combinations to access money and services for the