



[www.hdservicesltd.co.uk](http://www.hdservicesltd.co.uk)

# Boreholes

# Sewage Treatment Systems

# Water Treatment

For domestic and small commercial projects across the South East

01494 792000



Member since: 09/11/2017

Valid until: 09/11/2018



## BACKGROUND

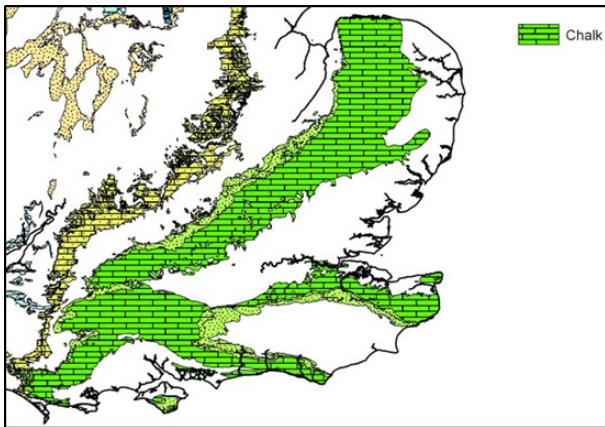
H.D. Services is a family run company based in Buckinghamshire. Formed by Frank Harris, a Civil Engineer experienced in soil mechanics and well drilling, the company has been in the business of constructing boreholes and drainage solutions and designing, installing and servicing sewage treatment systems in the south east for over 30 years.

We work hard to ensure the highest quality workmanship and service is delivered and we take pride in our approach to our work. We do not employ external consultants to design, agents to sell or sub-contractor labour to install – all work is completed in-house.

We cover a wide area and feasibility of a project can normally be determined upon receipt of a site postcode.

### **Boreholes and drainage:**

H.D. Services Ltd only operate cable-tool percussion drilling rigs. This is an informed decision as we operate in an area which is mainly underlain by the chalk aquifer. This aquifer is found under most of south east England and requires a clean method of drilling to minimise the requirement for borehole development and reduces the risk of contamination.



Boreholes can be used for either heat source or as a water supply or disposal. Water supply boreholes can provide water for irrigation or be used as a potable supply, subject to analysis and suitable filtration. Soakaway boreholes are generally used for clean water runoff to help prevent ground saturation and flooding.

# BACKGROUND

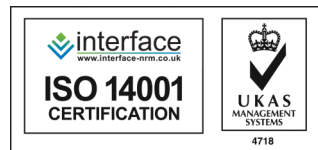
## Sewage Treatment Systems

H.D. Services Ltd have been involved in the design, supply and installation of sewage treatment systems for over 30 years. We can design bespoke systems to meet individual client needs or provide package. Projects we have undertaken throughout the south east range from single households to large estates, business parks, farms, schools, caravan sites, hotels and public houses.



## Quality and the Environment.

H.D. Services Ltd are committed to providing high quality installations and services to all clients and ensure that work undertaken is of minimal impact to the environment. We have Quality and Environmental Management Systems to ensure that all our work meets high standards both in terms of quality of products, services and suppliers we use, and that the Environmental Impact of everything we do is considered. We are BS EN 9001 and 14001 certified.



## BOREHOLES & DRAINAGE SOLUTIONS

H.D. Services Ltd only use cable-tool percussion drilling rigs, which is the technique preferred by the Environment Agency and water companies when constructing boreholes in the chalk aquifer.

In comparison to rotary drilling, which works a little like an electric drill, cable-tool percussion drilling minimises the risk of blocking fissures caused by flushing sediment into them. A cable-tool percussion rig is a little like an apple corer in that it uses a hollow tool to cut into the chalk. The chalk is then extracted from the hollow tool and disposed of. This method means that there is no backwash which can block fissures.

While cable-tool percussion drilling may be the preferred method of borehole construction within the chalk aquifer, it is a slow process. Whereas a rotary rig may complete a 100m depth hole in 2 days, it may take a cable-tool percussion rig 2 weeks to reach the same depth.

Our employees are accredited in various aspects of their craft and we have qualified engineers, plumbers and electricians as part of our team. We have constructed chalk boreholes for the Environment Agency and have an active working relationship with the British Geological Survey, to whom copies of all our water supply borehole logs are sent for inclusion in the national archive.

We have worked for various Highways Agencies and Councils, constructing boreholes for road drainage or treated effluent disposal.

### Water supply boreholes

It is permitted to abstract water from underground aquifers in the UK, as long as certain criteria are met. The Environment Agency requires licences for abstractions of more than 20,000 litres (20m<sup>3</sup>) per day. If the water is to be used as a potable supply (drinking water), this would require analysis to ensure it meets current DWI (Drinking Water Inspectorate) standards.



Abstracted water can be used for many different purposes such as irrigation, drinking water\*, car washing and so forth.

We have constructed water supply boreholes at Golf Clubs and Plant Nurseries for irrigation, at car washes to supply the water for the machines and at domestic properties to be used as grey water (toilet flushing etc) and as a potable supply.



\* any abstracted water to be used as a potable supply must be analysed prior to use to ensure safety. Filtration and treatment of the water may be required.

## BOREHOLES & DRAINAGE SOLUTIONS

Soakaway boreholes can be used to direct surface run-off from roof drainage (rain) or sewage processing plants, into the sub-soil. They are usually constructed in areas where run-off cannot be disposed of into existing sewers or watercourses. It is necessary to carry out percolation tests to determine the permeability of the soil.

There are 4 different ways H.D. Services construct soakaways:

### **Soakaway boreholes**

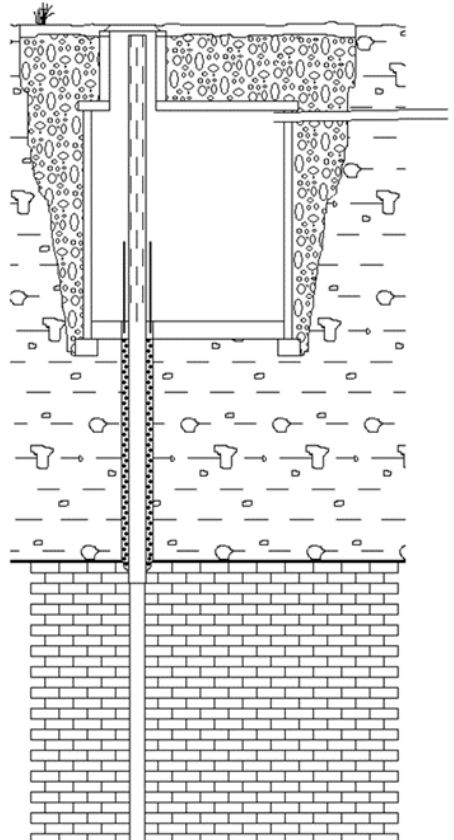
Soakaway boreholes are constructed in the same way as water supply boreholes. A borehole soakaway is used in areas where impermeable soils (clay) overlie permeable strata (chalk).

By discharging run-off into fissures at depth, the risk of shallow subsidence is reduced. We usually drill Soakaway boreholes with a 6" finished diameter but they can be constructed to different diameters if specified.

Soakaway boreholes are generally used for either clean surface water run off (rain water) or treated effluent disposal (i.e. discharge from your sewage treatment system).

Clean surface water can go straight into the ground. However, there are restrictions regarding disposal of effluent from sewage treatment systems, as no matter how well treated the effluent is it is not clean water and presents a risk to people and the environment. All deep sewage treatment effluent discharges must be registered with the Environment Agency. This applies to both new and replacement installations.

In all cases the Environment Agency should be consulted to determine whether any restrictions apply. Aquifers provide a large percentage of drinking water in the south east, meaning they have to be protected against contamination.



# BOREHOLES & LAND DRAINAGE

## Conventional Soakaway

A conventional soakaway consists of a 'sump' or 'crates' which allow the draining of water into the surrounding soil.

## Land Drainage

Land drainage consists of perforated pipework laid horizontally to allow soakage into the ground.

## Seasonal Intrusion Systems

These systems comprise of land drains which run to a ditch. Generally, they are laid in areas with less permeable soils where rainfall may water-log the ground surrounding the land drain, meaning that the excess water can discharge into the ditch.



# BOREHOLE DEVELOPMENT

Occasionally, boreholes drilled into the chalk aquifer may need to be developed to increase performance, or rehabilitated due to blockage. At H.D. Services we utilise two different types of development in the chalk aquifer – airlifting and acidisation.

## Airlifting:



This technique is usually used when debris finds its way into the borehole and results in sediment being pulled through the borehole pumps etc.

Airlifting involves the release of compressed air within the water column causing pressure imbalance and the discharge of water and sediment at the surface.

It is imperative that compressors be oil-free and the air must be filtered, as compressors could introduce hydrocarbons into the flow.

## Acidisation:

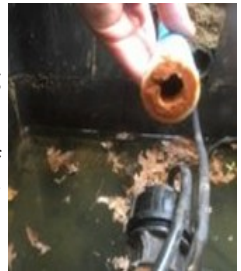
This technique is used to open or enlarge fissures in the chalk by using hydrochloric acid. This process increases the flow rate from the borehole by allowing more water from the aquifer to enter the borehole.

While acidisation can significantly increase the yield of a borehole and the process of acidisation is effective, in some cases it may not result in the yield improvement required to make the borehole commercially operational.

## BoreSaver:

Where there is a lined borehole which is susceptible to encrustation, we use a treatment called BoreSaver. This product was developed by Aquabiotics Industrial and is approved for use in private water supplies – including potable supplies.

BoreSaver is used in water supply boreholes which suffer from a build-up of iron bacteria, iron oxide, manganese oxide, calcium carbonate and other minerals. These can present themselves as rusty slime and blackish/brown deposits inside pipes, cloudy/dirty/rusty water and iron build up on pumps, that result in reduced water flow.



This particular treatment can remove deposits and residue that build up and cause blockages in wells, pipes, pumps and other equipment.

The BoreSaver treatment can improve the quality, output and flow of water supplies and can extend the working life of pumps and related equipment. The treatment is biodegradable and environmentally friendly.



# SEWAGE TREATMENT SYSTEMS

Regardless of whether the system is required for domestic or commercial purposes, if there is no mains sewer to which a connection can be made, a sewage treatment system may be the solution for you.

If you know you require a system but don't know where to start then contact us for an informal chat. Our extensive experience allows us to identify the best option, whether that be our bespoke design service, or an off the shelf alternative – both of which we can provide.

## Bespoke systems – HD-SM:



A bespoke design may be required if you have particular needs which cannot be met using an off the shelf option – think of it like purchasing a stereo. You can buy a system which has everything built in – CD, radio, record player etc. or you can purchase a separates system which means that if you need to upgrade your record player but nothing else, then you can. Our bespoke systems are akin to a separates system which mean we can provide exactly what you require.



Whether a treatment plant or an addition to an existing settlement tank, our systems are designed specifically for each site, taking in to account BOD loadings and flow using figures published by British Water and adopted by the Environment Agency.

None of our systems employ electrical or mechanical parts within the system itself – all are located outside of the tank, thus avoiding problems associated with wear of electrical or mechanical apparatus in a highly corrosive atmosphere. The treatment process is powered by small air blowers housed in separate 'beehives' or kiosks situated adjacent to the plant and connected to a 230-volt electrical supply from a nearby power source.



The HD-SM submerged media filtration process is an efficient system that can be readily expanded by internal modifications or additional chambers should the loadings increase or the Environment Agency revise the discharge consent standard.

## SEWAGE TREATMENT SYSTEMS

---

We have installed hundreds of our HD-SM systems throughout the South East, our portfolio including projects ranging from single households to estates, business parks, farms, schools, caravan sites, hotels and public houses.

H. D. Services Ltd can design, supply, install, commission and service systems so if there is ever a problem there is only one number to call.

H.D Services Ltd. provides a one-stop solution throughout South East England for sewage treatment systems which include:

- **FREE** feasibility study
- **COMPLETE** supply, installation and maintenance service
- **EXPERIENCED STAFF** who are directly employed
- **FULLY TRAINED AND ACCREDITED** personnel
- **ANNUAL** servicing/maintenance programme
- **ADVICE AND SUPPORT** liaising with the Environment Agency

We are committed to providing the best service we can. Consequently, we are members of and subscribe to the following:



## CASE STUDY



At a site in Berkshire, H.D. Services Ltd. was instructed to install a Sewage Treatment System, Water Supply Borehole, Open Loop Ground Source Heat Pump and Surface Water Soakaways for use in a 4 bedroom detached house.

The idea was for the property to be as self-sufficient as possible. Using the postcode of the site we were able to confirm suitable hydro-geology and a quotation was submitted.

### **Water Supply Borehole and Surface Water Soakaways:**

The water supply borehole was drilled using a cable-percussion rig - the method preferred by the Environment Agency and water companies when drilling into the chalk aquifer. A duty/standby dual pumping system was adopted in the borehole, meaning there is always a standby pump to act as backup should one pump fail. This method is always recommended by H.D. Services Ltd. as it means that any borehole pump issues can be addressed without major disruption to the water supply.

Water was pumped from the supply borehole to the soakaway to prove the efficiency of both. Borehole logs were submitted to both the British Geological Survey and Environment Agency to protect the abstraction from derogation by a third party.

### **Sewage Treatment System:**

A bespoke HD-SM Sewage Treatment System (STS) was designed based upon the number of people that could live at the property. The final effluent from an HD-SM STS is designed to achieve a discharge standard of 20:30:10 (BOD:SS:NH<sub>4</sub>) but increased standards can be accommodated by internal adjustments or additional chambers.

Three months after this system was commissioned a courtesy visit was conducted to confirm compliance with the design standard. All HD-SM's are covered by a full 24 month extendible warranty and an annual service contract is offered.

Our expertise covers not only the design, supply, installation, commissioning and servicing of sewage treatment systems but also septic tank modifications and installations. We have been installing our bespoke sewage treatment systems across the South East for more than three decades.





Three months after the system was commissioned, a courtesy visit was conducted to confirm compliance with the design standard.

All HD-SM's are covered by a full 24 month extendible warranty and an annual service contract is offered. Our expertise covers not only the design, supply, installation, commissioning and servicing of sewage treatment systems but also septic tank installation and modification. We have been installing our bespoke sewage treatment systems for more than two decades.

**Water Supply Borehole and Surface Water Soakaways:** The water supply borehole was drilled using a cable-percussion rig - the method preferred by water companies and the Environment Agency when drilling into the chalk aquifer. A duty/standby dual pumping system was adopted in the borehole, meaning there is always a standby pump to act as backup should one pump fail. This method is always recommended by H.D. Services as it means that any pump issues can be addressed without major disruption to the water supply and heating system.

Water was pumped from the supply borehole to the soakaway to prove the efficiency of both. Borehole logs were submitted to both the British Geological Survey and Environment Agency to protect the abstraction from derogation by a third party.

### **Summary:**

Work commenced in August 2012 when the water supply borehole was drilled and a pump left in situ to provide the construction site with a water supply during the building process. Work was completed in 2014. The installation benefits from a 5 year workmanship warranty, an annual maintenance contract and is in receipt of the domestic RHI.

## KEY PERSONNEL

### Mr. F. J. Harris – DIRECTOR

Since founding the company in 1984, Frank has twice served as Vice-Chairman of the Well Drillers Association. He is a qualified Civil Engineer and Mechanical Engineer, a Member of the Institute of Civil Engineers and a Fellow of the Geological Society.

### Mr. B. Clayden

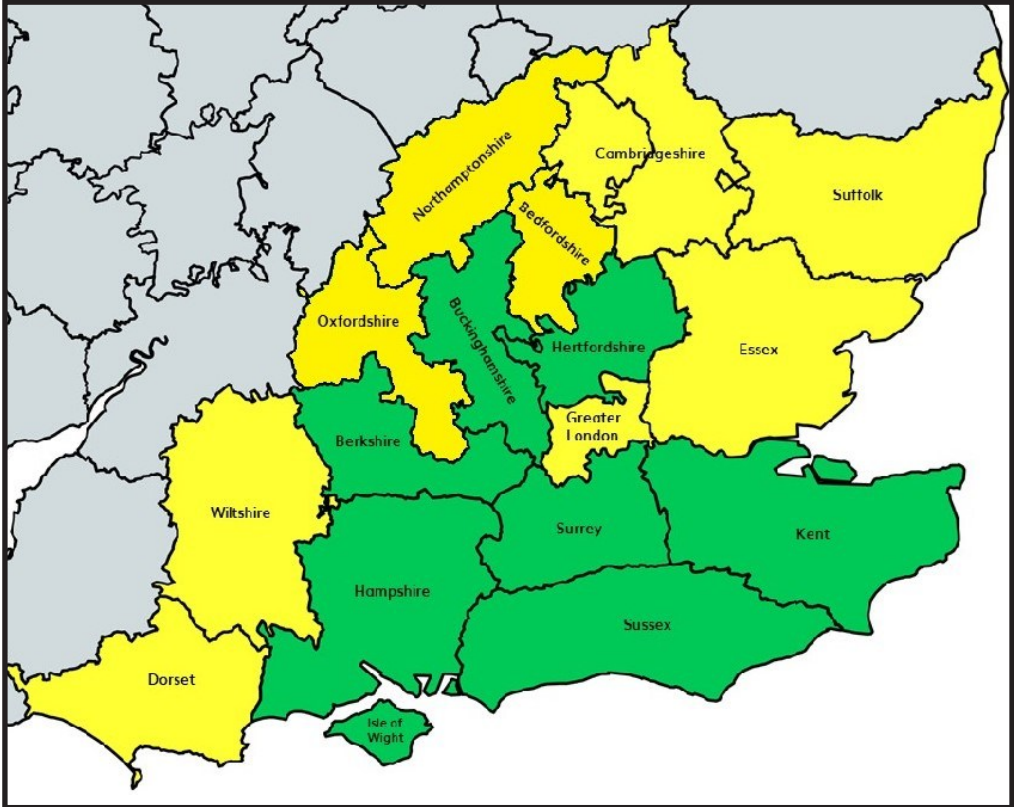
Brett has worked for H D Services for almost 20 years. Starting as a driller's mate, he has worked his way up and has been our Sewage Treatment Engineer for the last 5 years.

### SITE PERSONNEL

Our site staff, many of whom have been with the company for more than a decade, are all qualified in their various fields of expertise. They include Land Drillers, Electricians and Plumbers.



# AREA OF OPERATION



Areas of operation



Will consider projects in these areas

## CONTACT INFORMATION

---

### H.D. SERVICES LTD.

Thorne Barton Farm  
Chesham Road  
Ashley Green  
Bucks  
HP5 3PQ

Tel: 01494 792000  
E-mail: [enquiries@thehdgroup.co.uk](mailto:enquiries@thehdgroup.co.uk)  
Web: [www.hdservicesltd.co.uk](http://www.hdservicesltd.co.uk)

You can also find us on LinkedIn  and Facebook. 

