

**A Householder's Guide to Water  
Supply and Sewerage**

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*An FWR Guide*

**FR/G0002**  
**(August 2005)**  
**(First revision August 2006)**

**Second revision by Neil Tytler**  
**April 2012**

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**Price: £15.00**  
**(20% discount for FWR Members)**

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# **A Householder's Guide to Water Supply and Sewerage**

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## **ACKNOWLEDGEMENT:**

The reviewer freely acknowledges the advice and assistance provided by a number of people in the preparation of this revision including:

Dave Foster, Northern Ireland Environment Agency  
Iain Naismith, WRc-NSF Ltd.  
Nick Orman, WRc plc  
Laura Rawlings, Crop Protection Association  
Davy Robinson, Department for Environment, Food and Rural Affairs  
Stephen Rusk, Department for Regional Development Northern Ireland  
Simon Warburton, WRc-NSF Ltd.  
Mike Waite, FWR

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## ***Abbreviations and definitions***

CCWater	Consumer Council for Water
Defra	Department for Environment, Food and Rural Affairs
Drain	A pipeline, which normally conveys foul sewage and/or surface water runoff from <b>only</b> one property and which is inside the boundary of the property. If the pipeline serves more than one property this is normally called a <i>sewer</i> .
DWI	Drinking Water Inspectorate (for England and Wales)
EA	Environment Agency (for England and Wales)
NIEA	Northern Ireland Environment Agency
OFWAT	Water Services Regulation Authority
Private water supply	Water taken from private sources or supplied by non-licensed suppliers; supplies of water provided otherwise than by a statutorily appointed water undertaker.
Public water supply	Water supplied by a company or organisation licensed for that purpose.
SEPA	Scottish Environment Protection Agency
Sewer	A pipeline, which normally conveys foul sewage and/or surface water runoff from more than one property. If the pipeline serves only <b>one</b> property and which is inside the boundary of the property, this is normally called a <i>drain</i> .
Sewerage	A system of sewers.
Water services	The provision of drinking water and sewerage.
WIAPS	Water Industry Approved Plumbers Scheme
WRAS	Water Regulations Advisory Scheme

## **1 Introduction**

Most homes in the UK are connected to public water supplies and sewerage systems. Safe water supplies and good sanitation are the basic requirements for our health and that of the environment. Water and sewerage services depend on pipes that are buried, or hidden within the fabric of buildings, so they are taken for granted unless something goes wrong. We often demonstrate a lack of knowledge about the providers of water services, where their responsibilities end and where the responsibilities of householders start. How often do we hear reference to the 'Water Board', when such organisations ceased to exist in 1974?

There are good reasons for knowing more: - personal health may be affected by water contamination in the home, the health of the environment can be affected by what we dispose of down the drain, and leaking pipework may damage the fabric of the building.

This guide provides an introduction to: -

- The suppliers of water and sewerage services and their service standards;
- The components of water supply and wastewater drainage systems;
- Ownership, legal and environmental responsibilities;
- Regulations and guidelines relevant to the installation of water and wastewater pipes and fittings.

The guide covers the supply of water to domestic premises, the disposal of wastewater from these premises via sewers or other means such as septic tanks, and the drainage of rainwater. It is presented in three sections. The first describes the organisations that perform functions related to water supply and wastewater disposal, and the different charging schemes for services to households. The second and third sections describe water supply and sewerage systems respectively. Sources of more detailed information are provided where possible.

# PART I. SERVICES & PAYMENTS

## 2 Who does what? <sup>1</sup>

The organisation of water supply and sewerage services differs across the UK. Contact details for the organisations described in this section are provided in section 14 at the end of this guide.

### *Water service providers*

In England and Wales private companies provide water services. Ten water *service* companies deliver both water and sewerage services while another 14 water *supply* companies provide water to their customers. The water *service* companies were formed in 1989 by the privatisation of ten public water authorities. The water *supply* companies have always been in the private sector. Therefore, in England and Wales, in some areas you may receive a water supply from a water *supply* company and a *sewerage service* from a water *service* company. There is also provision for the *Water Services Regulation Authority (OFWAT)* to appoint a limited company to provide water and/or sewerage services for a specific area in place of the former provider. Four new companies had taken advantage of this provision by the end of 2011. About 1% of the population of England and Wales have private water supplies to their homes.

*Scottish Water* <sup>2</sup> supplies water and wastewater services to the whole of Scotland and although structured and managed as a private company is answerable to the Scottish Executive.



© Colin Cuthbert/Science Photo Library

*Northern Ireland Water* <sup>3</sup> is also a Government owned company (GoCo) and is run on a commercial basis and subject to independent environmental and economic regulation.

The above UK Water service organisations have to comply with the following financial, environmental impact and drinking water quality regulations.

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<sup>1</sup> Parts of this section are based on information provided by the website of *Water UK*, which is an association that represents UK water and wastewater service suppliers. More information may be found under the 'Water Facts' section of their website at [www.water.org.uk/home/resources-and-links](http://www.water.org.uk/home/resources-and-links)

<sup>2</sup> Created in April 2002 from three former public water authorities - North of Scotland Water, East of Scotland Water and West of Scotland Water. [www.scottishwater.co.uk/](http://www.scottishwater.co.uk/)

<sup>3</sup> Northern Ireland Water (formally *Water Services*) was set up on the 1st April 2007 to provide water and sewerage services to Northern Ireland. [www.niwater.com/](http://www.niwater.com/)

### ***Financial regulation***

Financial regulation is important because domestic customers have no choice of who supplies their water services. In England and Wales, customers' interests are protected by the *Water Services Regulation Authority* (OFWAT), which ensures that prices are controlled whilst assets are maintained.

In Scotland, the *Water Industry Commission for Scotland* regulates the charges and service standards of *Scottish Water*.

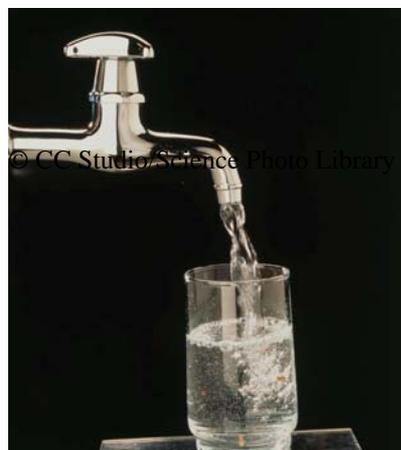
In Northern Ireland, regulation of *Northern Ireland Water* is done by the *Northern Ireland Utility Regulator* (previously the Northern Ireland Authority for Utility Regulation or NIAUR)<sup>4</sup>.

### ***Environmental regulation***

Environmental regulation affects water service organisations in two ways. Firstly, it controls their impact on the natural environment when performing the tasks of abstraction of water from rivers and groundwater for water supply purposes and also of wastewater collection and treatment, and discharge into rivers and seas. Secondly, it protects their water sources by regulating the activities of all organisations and individuals that may degrade the quality and quantity of water in sources such as rivers, lakes, reservoirs and underground aquifers. In England and Wales, the *Environment Agency (EA)* has a duty to protect the air, land and water environments. For water, this includes regulating abstractions and discharges from and to rivers, lakes and underground water; discharges to the sea; the conservation of water resources; and pollution prevention. It has powers to prosecute offenders.

In Scotland, the *Scottish Environment Protection Agency (SEPA)* has similar duties. SEPA does not have the power to prosecute but may refer cases to the procurator fiscal.

In Northern Ireland, the *Northern Ireland Environment Agency (NIEA)*, part of the Department of the Environment, monitors *Northern Ireland Water* and as with *SEPA* does not have the powers to prosecute but does so via the *Public Prosecution Service Northern Ireland*.



© CC Studio/Science Photo Library

### ***Drinking water quality regulation***

Drinking water quality regulation requires water suppliers to monitor the quality of drinking water and comply with good water management practices.

In England and Wales there is a government appointed regulator, the *Drinking Water Inspectorate (DWI)*. The DWI advises government on standards for the chemical and microbiological quality of water supplies. It can take enforcement action when the standards are not met and can prosecute those responsible if water

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<sup>4</sup> [www.uregni.gov.uk](http://www.uregni.gov.uk)

unfit for human consumption is supplied. It conducts inspections of water companies and produces annual reports on drinking water quality.<sup>5</sup>

In Scotland, regulation is the responsibility of the *Drinking Water Quality Regulator for Scotland*, which also produces an annual report.<sup>6</sup>

In Northern Ireland, the *Drinking Water Inspectorate (NI)* is located in the *Northern Ireland Environment Agency (NIEA)* regulating private water supplies within the *Department of the Environment* and carries out the regulation of public water supplied by *NI Water*, on behalf of the *Department for Regional Development*.<sup>7</sup>

### ***Customer representation***

In England and Wales, the *Consumer Council for Water (CCWater)*<sup>8</sup> represents the interests of customers in respect of price, service and value for money; they also investigate complaints from customers about their water company. CCWater has regional offices, which are listed under 'Consumer Organisations' in the telephone directory or on the CCWater website.

In Scotland the complaints relating to water are handled by the *Scottish Public Services Ombudsman (SPSO)*<sup>9</sup> and customer representation by *Consumer Focus Scotland*. *Consumer Focus Scotland*<sup>10</sup> does not deal directly with customer complaints or resolve individual matters.

In Northern Ireland water and sewerage customers' interests are represented by the *Consumer Council for Northern Ireland*<sup>11</sup> that also handles complaints about buses, trains, planes, ferries, natural gas, electricity and coal in the Province.

## **3 Paying for water services**<sup>12</sup>

### ***England and Wales***

In England and Wales, approximately 60% of households (2010) do not have a meter. Bills for their water and sewerage services are based on the rateable value of their property, plus a fixed charge. Thus, these customers have no financial incentive to reduce their consumption of water. An increasing number of households (40% in 2010) receive their supply via a water meter. The bills for their water and sewerage services are based on the amount of water that they use, plus a standing charge. A combination of significant population growth, the effects of climate change and the need to renew what is often Victorian infrastructure, will put increasing pressure on both the availability and cost of water. It is expected that

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<sup>5</sup> The regulations and the annual reports can be viewed or downloaded from the DWI website at [www.dwi.gov.uk](http://www.dwi.gov.uk)

<sup>6</sup> Available for download from [www.dwqr.org.uk](http://www.dwqr.org.uk)

<sup>7</sup> [www.doeni.gov.uk/niea/index/faqs/dw.htm](http://www.doeni.gov.uk/niea/index/faqs/dw.htm)

<sup>8</sup> [www.ccwater.org.uk](http://www.ccwater.org.uk)

<sup>9</sup> [www.spsso.org.uk](http://www.spsso.org.uk)

<sup>10</sup> [www.consumerfocus.org.uk/scotland/](http://www.consumerfocus.org.uk/scotland/)

<sup>11</sup> [www.consumercouncil.org.uk](http://www.consumercouncil.org.uk)

<sup>12</sup> The information relating to England and Wales is compiled from various webpages viewable on the OFWAT website at [www.ofwat.gov.uk](http://www.ofwat.gov.uk)

80% of households in England will pay for water using a meter by 2020. Since 1990 all newly constructed properties are metered.

For England and Wales OFWAT (see section 2 above) regulates the total charges made by each company by means of a five-yearly price review. OFWAT also has to approve the charging schemes for individual customer groups such as domestic metered, domestic non-metered, large industrial, small commercial etc. Companies publish these schemes annually and OFWAT adopts the following principles to approve schemes.



Water meter. ©Sheila Terry/Science Photo Library

- Charges for each service should reflect the cost of that service – hence a change in water charges is often not the same as a change in sewerage charges.
- Metered and unmetered household charges should be fairly balanced.
- Standing charges for customers with a meter should generally be no more than the customer-related costs of providing a metered service.
- Properties that are not connected for surface water drainage (see section 10) should pay less than those that are connected

Charges for an *unmetered* supply of water consist of a fixed charge and the *chargeable value*, which is a ‘*rate per pound*’, multiplied by the rateable value as shown in the last published valuation list (March 1990). This valuation list was based on the notional rental value of the property and varied according to the district in which the property was located and the type and size of the accommodation. It should be noted that this is *not* the same as the valuation list used for the council tax.<sup>13</sup> In April 1990, the community charge was introduced (since replaced in 1993 by the council tax) but water companies are still able to use the ‘old’ rateable value system of charging for properties built before April 1990. Properties built since April 1990 are usually metered.

<sup>13</sup> General information on the approach used to value properties for Council Tax purposes is available from the Valuation Office Agency at [www.voa.gov.uk/council\\_tax/index.htm](http://www.voa.gov.uk/council_tax/index.htm)

In April 2000, the Water Industry Act 1999 gave domestic customers the right to opt for a meter and be charged by consumption (for both water and sewerage services). The meter installation should be free, providing it is not impracticable or uneconomic for the water supplier. As a consequence, many customers may save money by switching to a meter, especially those customers with low water use living in homes with a high rateable value. Water companies will usually assist in calculating likely savings. Customers opting for a meter can revert to an unmeasured charge up to one month after the issue of the bill detailing the consumption after 12 months.<sup>14</sup>

In England and Wales, if you are located where one company supplies you with water and another with sewerage, it is common for the charges for both services to be collected by one of the companies on behalf of both. If two companies bill you separately for water supply and sewerage, the water supply company will inform the sewerage company if a meter is fitted and send them the meter readings to calculate the sewerage charges.

### ***Scotland***

In Scotland, *Scottish Water* sets charges for domestic customers within limits imposed by the *Water Industry Commission for Scotland* (see section 2). As above, for England and Wales, domestic customers of *Scottish Water* have the right to request the installation of a meter and be charged by consumption.

### ***Northern Ireland***

Unlike England, Scotland and Wales, not everyone in Northern Ireland pays a direct charge for water. The Water and Sewerage Services (Northern Ireland) Order 2006 ('the Order') provides the regulatory and financial framework for the water and sewerage industry.

The Order sets out a framework for funding of water and sewerage services to be met by consumers. Water pricing is in place for agriculture and industry through (largely) metered water charges which are charged according to usage. Water and sewerage charges were extended to all non-domestic customers on 1st April 2008. Trade effluent charges are also in place.

It is considered that households make a contribution towards the costs of water and sewerage services through contributions paid through the domestic regional rate. It is estimated that this contribution equated to about half of the level of funding required to provide services to domestic customers in 2008/09. The remaining funding requirement is raised through central Government taxes.

**N.B.** It is interesting to consider the charges for these essential services, which are "delivered to the household" and are essential for our health and sanitation. In England and Wales, for 2011-12, the average combined water and sewerage bill is £1.04p per day. The average annual bill for *unmetered* properties is £188 for water supply and £191 for sewerage. That for *metered* properties is £154 for water and £171 for sewerage per year.<sup>15</sup>

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<sup>14</sup> Further information about metering can be found in the leaflet 'Water metering and charging' available from Defra's website,

<http://archive.defra.gov.uk/environment/quality/water/industry/metering/index.htm>

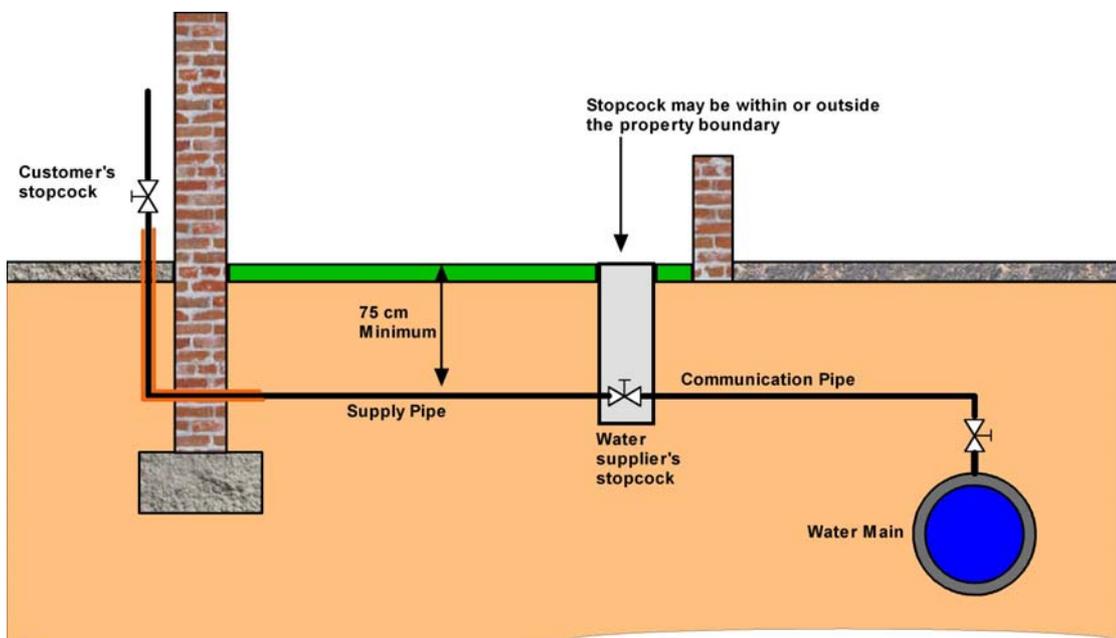
<sup>15</sup> [www.ofwat.gov.uk/consumerissues/chargesbills/prs\\_inf\\_charges2011-12.pdf](http://www.ofwat.gov.uk/consumerissues/chargesbills/prs_inf_charges2011-12.pdf)

## PART 2. WATER SUPPLY

### 4 Pipework from mains to properties

#### *What pipework is there?*

Pipes buried below the street<sup>16</sup> convey water from distribution reservoirs (service reservoirs) and pumping stations. These water mains are normally made of iron, PVC, polyethylene or asbestos cement. A *communication pipe* links the main to the boundary of each property and normally incorporates a stopcock at a convenient point close to the boundary (this stopcock is usually a small, screw-down type of valve for shutting off the flow of water from the main). A *supply pipe* then conveys the water within the property boundary and usually enters the property below ground level and rises through the floor in the kitchen to another stopcock. The combined length of the *communication pipe* and *supply pipe* is called the *service pipe*. The following diagram shows a typical layout of pipework and fittings.



Typical layout and components of a service pipe for an individual property

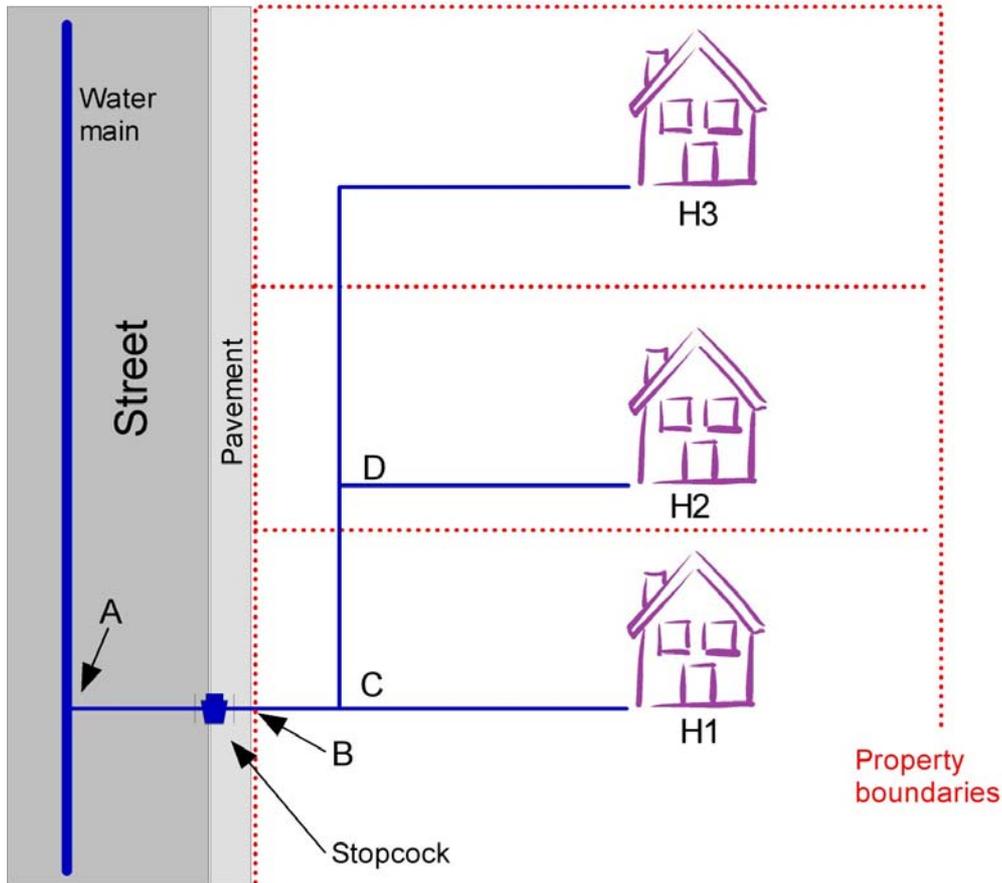
#### *Who is responsible for the pipework supplying the property?*

As a general rule, the water supplier is responsible for the main in the street and for that part of the *service pipe* that runs from the main to the property boundary or to the supplier's stopcock if this is located within the property boundary. The property owner is then responsible for the rest of the *service pipe* from the boundary or the supplier's stopcock. It is the property owner's responsibility to keep this pipe in good order just as for plumbing within the property.

However, this rule may not apply where there is no water main in the street adjoining the property and the service pipe crosses this street to join a water main

<sup>16</sup> Street is used in a general sense to include highways, roads, lanes, footways, passages and courts.

in another street or private land. In such circumstances the customer may have additional responsibilities outside the boundary of their property. Other complexities arise where more than one property share a supply pipe and have joint responsibility for maintenance of any part of the supply pipe that is shared prior to an individual property's take-off point. This situation is illustrated in the following diagram.



- |                  |  |
|------------------|--|
| A-B              | Communication pipe maintained by the water supplier  |
| B-C              | Common supply pipe maintained by H1, H2 & H3 jointly |
| C-D              | Common supply pipe maintained by H2 & H3 jointly     |
| C-H1, D-H2, D-H3 | Supply pipes owned by H1, H2 & H3 individually       |

Fortunately, for England and Wales, there is a comprehensive booklet that illustrates ownership and maintenance responsibilities for new and existing properties.<sup>17</sup> This is useful for understanding the more complex situations.

***What about leaks?***

The water supplier will repair leaks from its mains and from that part of the service pipe for which it has responsibility (in normal situations the communication pipe). Also, they will usually locate and repair leaks on your part of the service pipe up to the property, provided it is accessible and practicable. Many suppliers will do this free of charge (to conserve water) but you must check first. Water suppliers may provide a repair service for leaks inside the home and under the property but

<sup>17</sup> 'A Guide to Water Service Pipes – 3<sup>rd</sup> Edition'. ISBN: 1 898920 54 0. Published by WRc plc, Swindon. Tel. 01793 865069. [www.webookshop.com/acatalog/info\\_DUS025X\\_A.html](http://www.webookshop.com/acatalog/info_DUS025X_A.html)

usually this will be chargeable as for any other contracting plumber. However, you do not have to use the water supplier for repairs on your part of the service pipe.

If your property is metered and a leak is suspected on your side of the meter, take a reading last thing at night when water use ceases and first thing in the morning before it starts. If the reading has changed, indicating consumption, there may be a leak.

### ***Frost protection***

Water Regulations <sup>18</sup> state that service pipes (and associated fittings) should be laid between 75 cm and 135 cm deep from the finished ground level. The minimum depth is to ensure frost protection (under normal UK conditions) and the maximum depth is to ensure reasonable access for repairs. Pipes can be laid above or below these depths with written permission of the water supplier and subject to additional protection against mechanical damage or freezing if less than 75cm. The Regulations also provide guidance on insulation, installation of pipes and fittings in contaminated ground, and sealing at points of entry into the property.

### ***Know your liabilities***

When purchasing a home, the solicitor or licensed conveyancer undertakes 'searches' to define the purchaser's liabilities. It is prudent to include a drainage and water supply search. For water supply the following should be addressed.

- Liability for upkeep and replacement of long service pipes. Most likely in rural locations. May be in poor condition affecting pressure and flow of water.
- Service pipe laid in land belonging to others. More likely in rural areas but can occur in urban areas where property has no frontage on highway where main is located.
- Shared service pipe. Usually older terraced properties. Potential problems when all properties draw water at same time. Shared responsibility for upkeep.
- Substandard supply pipe. Older pipe constructed of lead or galvanised steel may contaminate water with lead, zinc or iron corrosion products.
- Water charges. If there is a shared supply pipe and one meter how are charges allocated? Note that where a property is currently metered a new owner does not have the option to revert to an unmetered basis for charging.

## **5 Water supply pipework and fittings on the property**

### ***A variety of systems***

There are two basic systems: *stored-water* (indirect) and *direct-fed*. Hybrids of these two basic systems also exist.

In a *stored-water system* a storage tank in the loft and the cold-water kitchen tap are fed directly at mains pressure from the service pipe. Kitchen appliances such as washing machines or dishwashers, and an outside tap also may be directly connected. Water for other taps, WC cisterns and showers is gravity-fed from the storage tank, which should be covered with a fitted lid to prevent contamination.

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<sup>18</sup> 'Water Regulations Guide'. ISBN: 0 9539708 0 9. Published by Water Regulations Advisory Scheme, Fern Close, Pen-y-Fan Industrial Estate, Oakdale, Newport, NP11 3EH.  
[www.wras.co.uk](http://www.wras.co.uk)

Drinking water should be drawn from the directly connected cold water tap in the kitchen. The storage tank may also feed a cylinder, which is heated by an immersion heater or via a coil conveying heated water from a central heating boiler, to provide hot water. Advantages claimed for the stored-water system are: -

- Some water available for WC flushing and washing during a mains failure.
- The ball-valve controlling flow into the storage tank acts as a non-return valve to protect the mains supply from contamination.
- Most of the pipework is at low pressure and hence quieter in operation.

In a *direct-fed system* all the cold water taps, WC cisterns and other water-using appliances are connected directly to the incoming service pipe and subject to mains pressure. There may still be a storage tank in the loft to supply water to the hot water cylinder, and possibly to a shower (showers gravity fed with both hot and cold water can be easier to control). Advantages claimed for this system are: -

- Drinking water available at all cold water taps.
- Can avoid using loft tank storage where space is limited.

#### ***Shutting off the water supply***

The main interior stopcock is normally located where the service pipe enters the property. This is often found in the kitchen, under or close to the sink. It is prudent to check where this is, whether you can operate it and whether it turns off the flow throughout the property. In the event of an emergency such as a burst pipe in the home this simple precaution may prevent much damage. Checking the location of the water supplier's stopcock near the property boundary will provide additional security.



#### ***A variety of materials***

Many materials have been used to manufacture pipes and fittings. Some, such as lead, galvanised steel and lead-based solders are no longer used because they may contaminate the water supply. In the case of lead pipes and cisterns this contamination can have health effects (see 'What about lead pipes?' below). The most commonly encountered plumbing materials are copper pipes and brass fittings. Plastic materials have become more popular with the development of robust push-fit joints (which can also be connected to existing copper pipework) and materials that are suitable for hot and cold supply, and central heating.

### ***What about lead pipes?***<sup>19</sup>

Lead is never used for new plumbing but can still be found in older houses built before 1970. If a lead pipe is unpainted the external surface will be a dull grey and if scraped with a knife it will feel soft and expose a shiny, silver coloured metal.

Lead dissolved from the inside of lead pipes may result in concentrations above standards set by the water quality regulations (see section 7). This is a potential health hazard for those who consume such water. The amount of lead dissolved from the service pipe or internal plumbing depends on factors such as water composition, temperature, water 'softness' and standing time of the water in a pipe run. Soft waters from upland and moorland sources tend to be the most 'plumbosolvent' but not exclusively so. Most water suppliers have now treated their waters to minimise their plumbosolvency; however, there is a limit to what can be achieved using this approach. The only way to be certain is to remove lead pipes completely. Most water suppliers will replace a lead communication pipe if a consumer replaces their lead supply pipe (read about pipe ownership in section 4). Indeed in England, Wales and Scotland the supplier has a duty to do so and is required to replace its communication pipe (upon written application of the consumer) if the lead standard is likely to be contravened. However, when the complete service pipe is made of lead just replacing the supplier's communication pipe is unlikely to be effective and it is advisable for the householder to replace their supply pipe as well.

### ***Electrical earthing***

In the past, it was common practice to earth domestic electrical installations by connecting them to metallic service pipes. This practice has not been permitted since 1966 for any new installations. Therefore, when replacing lead service pipes or any other metallic service pipes (e.g. galvanised steel, copper, wrought iron) it is important to consider possible effects on the earthing system. Failure to do so may create risks to house occupiers, water supplier personnel and contractors. The earthing of a property is an essential safety requirement and is the sole responsibility of the owner of the property. If a householder organises work on their part of the service pipe it is important to obtain advice on their earthing installation from a qualified electrician.

### ***Know your responsibilities***

Householders and anyone who installs plumbing systems or water fittings have a legal duty to ensure that the systems comply with the water fittings regulations. Their purpose is to prevent public water supplies from being misused, wasted and contaminated. It is obviously in the best interests of the householder to ensure compliance and the following section provides more information about the regulations and their scope.

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<sup>19</sup> More information is available from the drinking water quality regulators websites at [www.dwi.gov.uk](http://www.dwi.gov.uk) (England & Wales), [www.dwqr.org.uk](http://www.dwqr.org.uk) (Scotland) and at [www.doeni.gov.uk/niea/index/faqs/dw.htm](http://www.doeni.gov.uk/niea/index/faqs/dw.htm) (Northern Ireland).

## 6 **Water fittings regulations** <sup>20</sup>

### ***The legislation and objectives***

The *Water Supply (Water Fittings) Regulations 1999* (applicable to England & Wales), the *Scottish Water Byelaws 2004* (applicable to Scotland) and the *Water Supply (Water Fittings) Regulations (Northern Ireland) 2009* (applicable to Northern Ireland) are national requirements for the design, installation and maintenance of plumbing systems, water fittings and water-using appliances. They apply to all types of premises receiving a public water supply. Householders and those installing plumbing systems or water fittings must ensure that they satisfy the regulations or byelaws. For new dwellings, it is the responsibility of architects, building developers and plumbers to follow the regulations on behalf of future owners. The regulations do not apply to private supplies except where there is a possibility of cross connection to a water undertakers supply.

The most important objective is the protection of water quality. For example, where equipment and plumbing is in proximity to fluids or materials that could contaminate the water supply, there must be adequate protection to stop backflow of contaminated water back into the water supply pipework. Other objectives include safety and ease of access for maintenance, the detection of leakage, protection against damage or freezing, and prevention of water wastage.

### ***Who enforces these regulations?***

The water suppliers are responsible to government for the enforcement of the regulations. They undertake inspections of new premises and of existing installations when certain types of modification are made (see ‘When do I need to contact the water supplier?’ below). The water supplier will have a ‘Code of Practice on Enforcement’ and copies should be available free of charge on request.

### ***Ensuring that new materials and fittings comply with the regulations***

It is not illegal to sell unsuitable fittings and appliances. However, to install one in potential contact with a public water supply would be illegal so it is prudent to check suitability before purchase. The most reliable way is to check if the item is listed in the latest version of the ‘Water Fittings and Materials Directory’ <sup>21</sup> which is published by the Water Regulations Advisory Scheme (WRAS) and is freely available online at [www.wras.co.uk/directory](http://www.wras.co.uk/directory)

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<sup>20</sup> Much of the information provided in this section is derived from the *Water Regulations Guide*, ISBN 0-9539708-0-9 (available from the Water Regulations Advisory Scheme, Fern Close, Penny-Fan Industrial Estate, Oakdale, Newport, NP11 3EH) and the website of the scheme at [www.wras.co.uk](http://www.wras.co.uk)

<sup>21</sup> *Water Fittings and Materials Directory*, Water Regulations Advisory Scheme, Fern Close, Penny-Fan Industrial Estate, Oakdale, Newport, NP11 3EH. Tel: 01495 248454. Website at [www.wras.co.uk](http://www.wras.co.uk)

The Directory lists fittings, materials and appliances approved for use on UK water systems. It is the essential reference for architects, manufacturers, builders, heating engineers and plumbers. Fortunately this publication is now freely accessible on the WRAS website. Compliance with the regulations may also be indicated by a stamp or label stating, “WRAS approved”. WRAS approval applies only to suitability for use in contact with water and does not cover performance or fitness for purpose!



© WRAS

An example of the importance of the regulations is for preventing the contamination of drinking water with lead. Lead can enter drinking water by leaching from lead pipes (see section 5 – *What about lead pipes?*) and also by leaching from lead-based solders used in joining copper pipework. The regulations ban the use of lead-based solders for domestic water systems and other installations where the water is required for drinking, cooking or food production purposes. However, lead solder can still be used in certain circumstances such as closed water circuits in central heating systems.

#### ***When do I need to contact the water supplier?***

The following circumstances normally require the provision of details to the water supplier and its consent before work starts. Consent is not withheld unreasonably, but may be granted subject to conditions. Your water supplier should be able to provide a notification form or provide details of the information requirements. If an application is not dealt with within 10 working days, it is deemed granted, although there is still an obligation on the householder to ensure compliance with the regulations. Item 2 on the list below means that you would not normally be required to notify the water supplier if you are planning to alter or extend a plumbing system within your own domestic property, but check the rest of the list carefully as some items are not covered by this general exemption for domestic properties.

1. The erection of a building or other structure, not being a pond or swimming pool.
2. The extension or alteration of a water system on any premises other than a house. #
3. A material change of use of any premises.
4. The installation of:
  - (a) a bath having a capacity, as measured to the centre line of overflow, of more than 230 litres;
  - (b) a bidet with an ascending spray or flexible hose; #
  - (c) a shower unit of a type specified by the Regulator (at time of writing none is specified);
  - (d) a pump or booster drawing more than 12 litres per minute;
  - (e) a unit which incorporates reverse osmosis;
  - (f) a water treatment unit which produces a waste water discharge or which requires the use of water for regeneration or cleaning;
  - (g) a reduced pressure zone valve assembly or other mechanical device for protection against a fluid which is in fluid category 4 or 5;
  - (h) a garden watering system unless designed to be operated by hand;
  - (i) any water system laid outside a building and either less than 750mm or more than 1350mm below ground level.
5. The construction of a pond or swimming pool with a capacity greater than 10,000 litres.

Installation of items marked # by an ‘Approved Contractor’ does not require advanced notification (see ‘Using an Approved Contractor’ below).

### ***Using an Approved Contractor***

Ensuring that an installer is aware of the regulations, and performs compliant work, can be achieved by employing an ‘*Approved Contractor*’. An Approved Contractor will have demonstrated their experience of plumbing work and knowledge of the regulations and will certify that the installation satisfies the regulations. Details of Approved Plumbers should be available from your local water supplier.<sup>22</sup>

## **7 Drinking-water quality**

Water suppliers have a legal duty to supply water that is wholesome at the point where it passes from the water supplier’s pipe into the consumer’s pipe. ‘Wholesomeness’ is defined by reference to standards and other requirements set out and enforced by the *drinking water quality regulators* (see section 2). However water suppliers are not held responsible for any deterioration in the quality of the water within a consumer’s premises, except in the case of copper or lead. If the standards for these metals are likely to be exceeded in the water supplied to the cold tap in the kitchen, then the water supplier must consider further treatment to reduce the risk of the water becoming unwholesome. However if water in a public building is found not to comply with standards the water supplier is required to use powers available to it under 75(2) of the Water Industry Act 1991 to ensure steps are taken by the responsible owner or user of the building to restore compliance. This duty was set out in the Water Supply Regulations 2010 as an addition to the Water Supply (Water Quality) Regulations 2000.

Most of our drinking-water quality standards are derived from a European Directive<sup>23</sup> and are based on World Health Organization guidelines.<sup>24</sup> The standards address microbiological quality, chemical quality, appearance, taste and odour. The regulators enforce the standards by checking the results of drinking-water tests performed by the water suppliers. The water is tested at water treatment works, in distribution systems and at consumers’ taps in designated geographical areas (called water supply zones). The results of these tests are available for inspection at the water supplier’s offices on its public record. The customer services staff should be able to explain the significance of these results. The local authority receives information about the supplies in their area and may be able to provide information. The regulators also make information available. In England and Wales the Drinking Water Inspectorate provides detailed information in annual reports, which can be downloaded and viewed at their website.<sup>25</sup> An annual report on drinking water quality in Scotland is available on the website of Drinking Water

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<sup>22</sup> Many water suppliers subscribe to the Water Industry Approved Plumbers Scheme (WIAPS) operated on their behalf by WRAS. Anglian, Severn Trent and Thames run their own schemes. Three national schemes have also been approved by Defra, operated by the Chartered Institute of Plumbing and Heating Engineering (CIPHE), the Scottish and Northern Ireland Plumbing Employers’ Federation (SNIPEF) and the Association of Plumbing and Heating Contractors (APHC).

<sup>23</sup> European Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption. Official Journal L 330, 05/12/1998 p. 0032 – 0054.

<sup>24</sup> WHO (2004). *Guidelines for Drinking-water Quality*, Fourth Edition, World Health Organization, Geneva. These guidelines and supporting information can be downloaded from [www.who.int/water\\_sanitation\\_health/publications/2011/dwq\\_guidelines/en/](http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en/)

<sup>25</sup> [www.dwi.defra.gov.uk/about/annual-report/index.htm](http://www.dwi.defra.gov.uk/about/annual-report/index.htm)

Quality Regulator for Scotland <sup>26</sup> and for Northern Ireland from the website of the Drinking Water Inspectorate for Northern Ireland. <sup>27</sup>

***If you have a problem with your water supply***

In the first instance, contact your water supplier. Enquiry and emergency numbers are normally listed under 'Water' in the telephone directory or on their bills. In England and Wales, if you are unhappy with the water company response then contact your regional office of CCWater, in Scotland the SPSO and in Northern Ireland CCNI (see section 2 above). Information on several common problems, such as discoloured or cloudy water, is provided on the website of the Drinking Water Inspectorate (see section 14).

***Private water supplies***

The water quality standards specified in the European Directive (see beginning of this section) apply to all supplies whether they are public or private. Generally, a private supply is any supply **not** provided by a water company in England and Wales, Scottish Water or Northern Ireland Water. The source of the supply may be a well, borehole, spring, stream, river, lake or pond. The supply may serve just one property or several properties through a network of pipes. It is estimated that there are 50,000 private supplies in England and Wales serving 1% of the population. In Scotland there are about 20,000 private supplies and approximately 4000 in Northern Ireland.

In England, Wales and Scotland local authorities are responsible for monitoring private supplies. DWI provides support and advice to Local Authorities on all aspects of drinking water quality, including on Private Water Supplies. In Northern Ireland it is the responsibility of the Drinking Water Inspectorate (NI). All private water supplies are required to be registered with the local authority where the source of the supply is located.

In England and Wales the Private Water Supplies Regulations 2009 (the Regulations) came into force on the 1<sup>st</sup> January 2010.<sup>28</sup> The regulations require Local Authorities to complete a risk assessment of all Private Water Supplies (PWS) in the first five years after the Regulations come into force, except for supplies to a single non-commercial dwelling (unless a risk assessment is requested).

The owner or user of a private supply is responsible for its operation and maintenance. If you supply water to other people in the course of a business, for example by renting out holiday accommodation or using water for food production, you have a duty of care towards customers for the safety of water you supply. All private water supplies can pose a threat to health unless they are properly protected and treated. They may become contaminated with bacteria, protozoa, parasites and viruses (micro-organisms) or other substances. Contamination may not show by smell, taste or colour of the water.

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<sup>26</sup> [www.dwqr.org.uk/technical/annual-report](http://www.dwqr.org.uk/technical/annual-report)

<sup>27</sup> [www.doeni.gov.uk/niea/water-home/drinking\\_water/annual\\_reports.htm](http://www.doeni.gov.uk/niea/water-home/drinking_water/annual_reports.htm)

<sup>28</sup> The Private Water Supply Regulations 2009 SI 3101:  
[www.dwi.defra.gov.uk/stakeholders/legislation/pwsregs2009.pdf](http://www.dwi.defra.gov.uk/stakeholders/legislation/pwsregs2009.pdf)

Further information on private water supplies is available from the DWI website. An extensive *Private Water Supplies: Technical Manual*, available on Government's official Private Supplies website,<sup>29</sup> is a document to assist professionals in regulating and maintaining private water supplies. More detailed information on appropriate water treatment systems is available in a published manual.<sup>30</sup>

## **8 Standards of service from the water supplier**

Water suppliers have to comply with standards of service as defined by Government. If they are not complied with, affected customers may be entitled to compensation. The standards normally apply to the following service elements.

- Water quality
- Making and keeping appointments
- Responding to account queries
- Responding to complaints
- Interruptions to water supply, both planned and unplanned
- Low water pressure
- Compensation in the event of a drought

For example, in England and Wales companies pay compensation where essential household water supplies are interrupted as a result of emergency restrictions authorised by drought orders. Essential supplies are for purposes such as cooking, washing, drinking and flushing the toilet. Non-essential uses include garden watering and washing the car, which, as a drought progresses can be curtailed by the introduction of sprinkler and hosepipe bans.

Many suppliers have adopted standards of service that are more extensive than those defined by Government, so it is prudent to ask your water supplier for a copy of their scheme. In England and Wales, CCWater can also provide information and advice (see section 2).

## **9 Water conservation and efficiency**

The water suppliers have a duty to promote efficient use of water by their customers. All suppliers publish leaflets and advertise advice on water saving measures. Metered households have a financial incentive to ensure efficient water usage but we all have a duty to conserve water for the health of our environment.

The Water Fittings Regulations (see section 6) contain many recommendations that are intended to promote the efficient use of water. For example, they specify maximum water consumption volumes for domestic washing machines (per kilogram washload) and dishwashers (per place setting). This is because washing machines typically account for about 14% of the water we use at home, while the kitchen sink and dishwasher account for another 8%.

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<sup>29</sup> Government's official Private Supplies website: [www.privatewatersupplies.gov.uk](http://www.privatewatersupplies.gov.uk)

<sup>30</sup> *Manual on Treatment for Small Water Supply Systems*. ISBN 1 898920 46 X. WRc plc, Frankland Road, Blagrove, Swindon, SN5 8YF. Tel 01793 865069

Energy		Washer-Dryer
Manufacturer Model		
More efficient		B
A		
B		
C		
D		
E		
F		
Less efficient		
G		
Energy Consumption <small>(to wash and dry a full capacity wash load at 60°C)</small>	kWh	2.4
Washing (only) <small>Actual energy consumption will depend on how the appliance is used</small>	kWh	0.95
Washing performance <small>A : higher G : lower Spin speed (rpm)</small>		A
Capacity (cotton) kg	Washing Drying	
Water consumption (total) ltr.		64
Noise (dB(A) re 1 pW)	Washing Drying Spinning	
Further information is contained in product brochures		
Norm EN 50229 Washer-dryer Label Directive No 96/60/EC		

New washing machines and dishwashers are more water and energy-efficient than they used to be. Modern washing machines use about half the water and energy of 10-year-old machines.

All new washing machines and dishwashers have to display an energy label. The label allows comparisons of the energy and water consumption. "A" rated machines are the most and "G" rated machines the least water and energy efficient.

'Which' magazine<sup>31</sup> also tests many appliances and their results, in conjunction with the energy label, can help make a choice.

The Regulations also take account of the fact that 35% of domestic water consumption is used for flushing toilets. They specify that all new WC suites shall flush with no more than six litres of water. Dual-flush cisterns are permitted if the method of operation is clear and instructions are provided on the cistern or nearby.

The environmental regulators also promote water conservation. The Environment Agency provides practical advice on the 'save water' pages of their website,<sup>32</sup> including fact cards on water efficiency technologies under the following headings.

- Domestic appliances
- Gardening
- Greywater
- Rainwater reuse
- Taps
- Flow regulation and leak detection devices
- Urinals
- Waterless and vacuum toilets
- Water-efficient WCs and retrofits
- Showers and baths
- Plumbing and heating design

<sup>31</sup> Which? PO Box 44, Hertford, SG14 1SH. Tel. 0845 307 4000 [www.which.co.uk](http://www.which.co.uk)

<sup>32</sup> [www.environment-agency.gov.uk/savewater](http://www.environment-agency.gov.uk/savewater)

## PART 3. SEWERAGE

### 10 Types of drainage system

#### *Foul water*

The sewage from toilets and the wastewater from baths, sinks, washbasins and washing machines is normally called *foul water*. This is conveyed via U-bend traps (to prevent odours) to underground pipes (normally 100 to 150 mm diameter) and inspection chambers.

Inspection chambers are usually found within the property boundary and provide access to drains and sewers for clearing blockages and checking their structural condition. They are usually at a point where there is a change in direction or a meeting of pipes.



Typical inspection chamber

There are two types of layout for the foul water drainage pipework in the property.

1. In properties built before the late 1950s, toilet waste usually runs separately into a vertical *soil pipe* (normally 150 mm diameter) connected directly to the underground pipes. This soil pipe may be outside or inside the property. The other wastewaters from the sinks etc. feed into a trapped gully at ground level.
2. In later properties, all the foul water is directed towards the single soil pipe, with a possible exception being the kitchen sink, which may drain via a gully. This layout is called the single-stack waste system.

In larger properties there may be more than one soil pipe, more than one gully and both layouts may be present. The foul water may then flow to public sewers, which convey the water to wastewater treatment works owned and operated by your sewerage service provider. Alternatively, especially in country areas remote from public sewers, the foul water may flow to your own *septic tank* or *cesspit*.<sup>33</sup> The ownership and maintenance of sewers is described in section 11. The design and operation of septic tanks and cesspits is described in section 12

#### *Surface water*

The water that drains from the roof or from an impervious surface via a collection drain is termed *surface water* to distinguish it from the foul water described above. This water may drain to a *soakaway*<sup>34</sup> in the ground adjacent to the property, it may drain to a dedicated surface water sewer (sometimes called a *stormwater*

<sup>33</sup> A cesspit is a tank, which stores foul water until it is collected. A septic tank has treatment chambers and the effluent is discharged to an associated soil drainage system or an additional treatment process; this avoids the need for frequent emptying.

<sup>34</sup> May be an underground pit or channel filled with rubble or stones.

sewer) or it may drain to the same sewer that conveys the foul water (a *combined sewer*).

### **Greywater**

This is wastewater generated from domestic activities such as baths, showers, hand basins, washing machines and dishwashers only, which can be recycled on site to use for garden irrigation or flushing toilets. It must **never** be used to drink.

## **11 The ownership and maintenance of sewers**

### **Ownership**

Sewerage law is complex and involves responsibilities held by the sewerage service provider, local authorities and the householder. Local authority and sewerage service provider websites usually contain advice and contacts. A guide to sewerage law is available for England and Wales from FWR.<sup>35</sup>

Underground drainage pipes are either termed drains, lateral drains or sewers (either public or private). The following definitions apply whether the pipes are conveying foul water, surface water or both.

A **drain** is a pipe that carries wastewater (foul or surface water) from just one property. Where it connects to a public sewer it is normally the responsibility of the householder up to the curtilage (the boundary) of the property. When drains are not connected to the public sewer, they are normally the owner's responsibility up to their connection with a private sewer, a watercourse, a culvert or a public treatment facility.

A **lateral drain** is the section of a drain that extends beyond that property's curtilage to where it connects with the public sewer, or where it connects with another drain from another property or properties. These are normally owned and maintained by the sewerage service provider.

A **sewer** is defined as a drain, which is shared or used by more than one property. There are two types of sewer:

A **public sewer** is the responsibility of the sewerage service provider to maintain and repair. It is a pipe, which has either been adopted as a public sewer, is connected to the public sewer system, or was in use prior to 1937 (1965 in inner London).<sup>36</sup> There are, however, a small number of exceptions. Most public sewers are in roads and public spaces but they may now be on private land such as your garden. The sewerage service provider has a right of access to these sewers for repairs and maintenance.

**Private sewers** are pipes that take wastewater from one property but which are not public sewers.

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<sup>35</sup> *An Inspector's Guide to Sewerage Law (England & Wales Edition)*. 3<sup>rd</sup> Edition November 2011. Available from FWR. Contact details as on the Title page of this publication.

<sup>36</sup> A general definition not applicable to certain properties in inner London where local advice should be obtained.

As mentioned in section 10, the drains from your property may connect to a public sewerage system that conveys both foul and surface water (a **combined system**) or to a system that conveys foul and surface water in separate pipes (a **separate system**). Foul water drains must not be connected to surface water drains. Surface water drains should only contain relatively uncontaminated surface water as they discharge directly to watercourses. If foul water drains are wrongly connected to surface water drains, the environmental regulator may hold you liable for any pollution that occurs as a result of the wrong connection. You may also be at risk from private prosecutions. Therefore, it is important to know which system(s) your property is connected to; your local authority or sewerage service provider should be able to assist by reference to public sewer records.

### ***Maintenance***

A **Sewer** is normally a **public sewer** and is owned, maintained and cleansed by the sewerage system provider. They have to comply with a service standard with respect to flooding arising from these sewers. For example, in England and Wales, if wastewater from a company's sewer enters a customer's property, customers may be entitled to a refund of their sewerage charges for the year. If, however, sewer flooding has been caused by severe weather (e.g., widespread flooding) then a payment is not due. **Private sewers** will normally now only occur on systems with private treatment works or on surface water systems discharging directly to a watercourse.

**Drains** are the householder's responsibility, both inside and outside the property until they connect with a public sewer. Many properties connect to drains in some form or another, and householders are often unaware that they are responsible for their maintenance until a problem occurs such as blockage and flooding.

Drains (and associated inspection chambers) serve a single property and are owned and maintained by the owner of the property. Owners are responsible for carrying out repairs to their drains, which will be at their expense unless they can prove damage by others. Where drains communicate with the public sewer system they are normally the owner's responsibility up to the boundary of the property. Where they do not connect to the public sewer system, drains are normally the owner's responsibility up to their connection with a private sewer, a watercourse, a culvert or a public treatment facility.

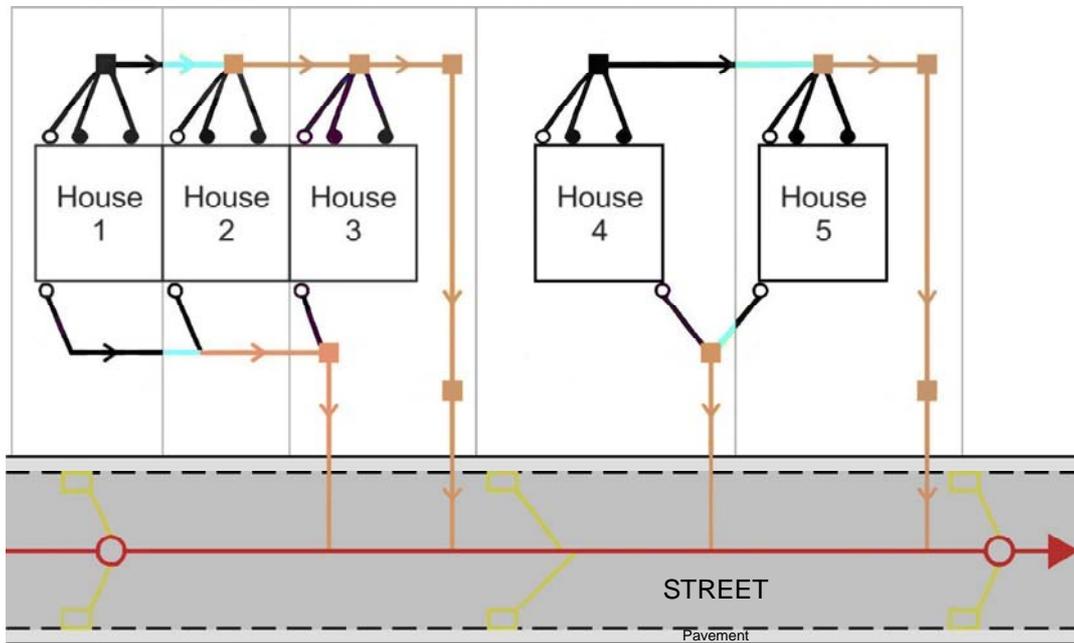
**Lateral drains** connected to the public sewer systems are normally owned and maintained by the Sewerage Undertaker.

For more comprehensive guidance on sewerage law a guide is available from FWR.<sup>37</sup>

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<sup>37</sup> *An Inspector's Guide to Sewerage Law (England & Wales Edition)*. 3<sup>rd</sup> Edition November 2011. Available from FWR. Contact details as on the Title page of this publication.

This situation is illustrated in the following diagram.



Key

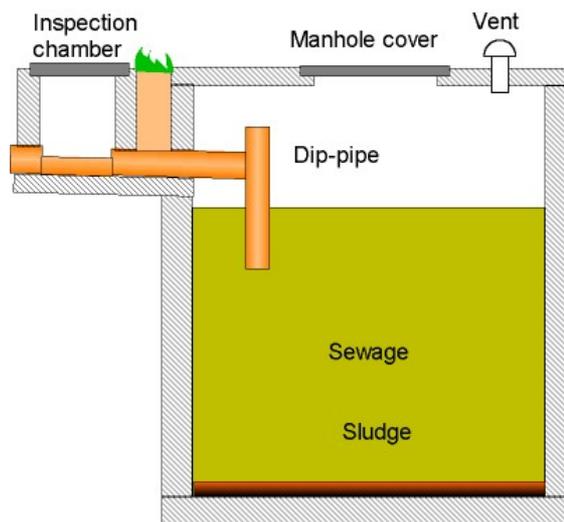
	Private drain - Householder's responsibility
	Lateral drain - Sewerage Undertaker's responsibility
	Sewer - Sewerage Undertaker's responsibility
	Inspection chamber
	Rainwater pipe
	Soil pipe or sink waste pipe
	Manhole
	Gully - Highway Authority's responsibility
	Main Sewer - Sewerage Undertaker's responsibility

In some situations such as housing estates entirely served by a private sewerage system, **all** connected properties may be responsible for repairs and maintenance, whether they are upstream or downstream of the defective sewer.

The Government is consulting on further changes to sewerage law in England and Wales and the relevant section of the Defra website<sup>38</sup> should provide the latest news. Also several members of the Association of British Insurers have recognised the need to improve the quality of repairs in the domestic drainage industry. These members have formed a Drainage Forum and produced a Best Practice Manual.<sup>39</sup>

## 12 Septic tanks, cesspits and other small-scale sewage treatment

Just over 4% of homes in England and Wales are not connected to public sewers. The percentage in Scotland and Northern Ireland is higher. These homes are usually in rural areas. Their foul water runs into a septic tank, or a cesspit (also called a cesspool), or to another type of private small-scale sewage treatment plant. A **septic tank** is designed to provide treatment of the wastewater prior to discharge via a soakaway system into the surrounding ground or another stage of treatment prior to discharge to a stream. A **cesspit** is basically a holding chamber for the wastewater prior to it being emptied by a tanker for disposal at a wastewater treatment works. Not surprisingly, cesspits are relatively expensive to operate. The environmental regulators regard connection to a public sewerage system as the best environmental option in most circumstances because of potential problems with groundwater and stream contamination by unsupervised domestic installations.



Cross-section view of a typical cesspit made from brickwork or concrete

Connection to the public sewer may also be advantageous for the householder and it may be possible to require the provision of (or “requisition”) a new or extended public foul sewer from the local sewerage undertaker. For further information on this, contact your Local Authority or sewerage undertaker. A useful compendium of advice on “**Disposal of sewage where no mains drainage is available**”, often referred to as “PPG4”, can be obtained from the environmental regulators.<sup>40</sup>

<sup>38</sup> [www.defra.gov.uk/environment/quality/water/sewage/sewers/](http://www.defra.gov.uk/environment/quality/water/sewage/sewers/)

<sup>39</sup> *The Drain Repair Book. Best practice manual for the inspection & repair of domestic & light industrial drains.* Published by WRc plc, Frankland Rd, Swindon. SN5 8YF. Tel 01793 865069

<sup>40</sup> *Disposal of sewage where no mains drainage is available.* Pollution Prevention Guidelines 4. <http://publications.environment-agency.gov.uk/PDF/PMHO0706BJGL-E-E.pdf>

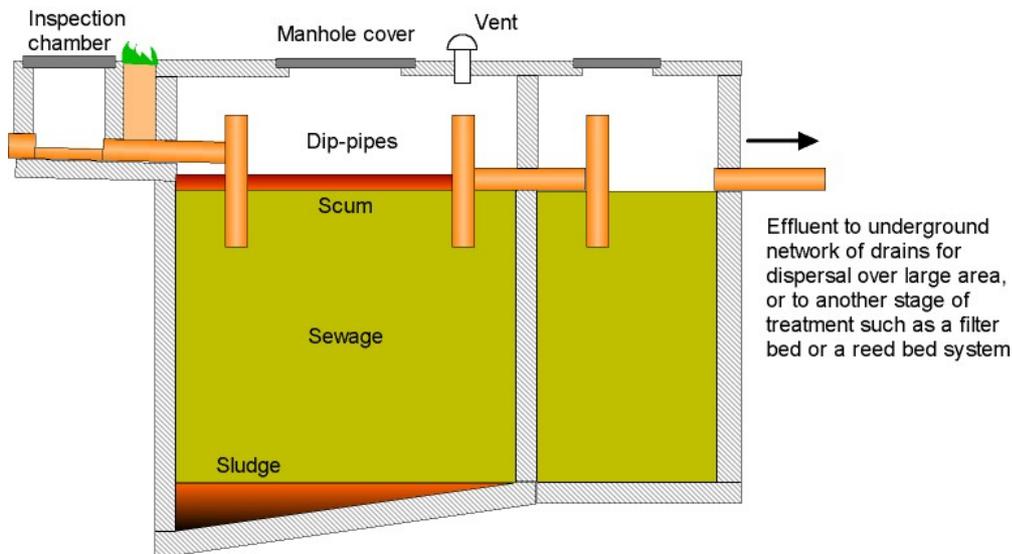
### ***Cesspits (Cesspools)***

Older cesspits are usually lined with brick or concrete. Modern ones are sometimes prefabricated in GRP (glass reinforced plastic). It is essential that it is impervious to the ingress of water, has no leaks and that it does not overflow. A level warning device is recommended. In Scotland, the Building Regulations do not permit the use of cesspits. In England and Wales, the Building Regulations prescribe a minimum capacity of 18,000 litres and at least 45 days storage for the installation. A guideline for the production of domestic sewage is 180 litres per person per day. This figure can be used to calculate emptying frequency or in the case of a new installation, the required tank size. Unfortunately many existing cesspits are now too small for the volumes of waste produced in modern households and require emptying as frequently as every three weeks.

Normally, you do not need the consent of the environmental regulators to operate a cesspit (as they should not discharge to the local environment). However, as a precaution against overflow and leakage, the tank should be at least 15 metres from any dwelling and as far as possible from any watercourse but no closer than 10 metres.

### ***Septic tanks***

A typical septic tank is shown in cross-section below.



Cross-section view of a typical septic tank made from brickwork or concrete

As for cesspits, these may be constructed from concrete, brick or prefabricated from GRP.

Septic tanks usually consist of two or three chambers where solids and liquid are broken down by microbial activity before the effluent is either:-

- drained into a subsurface soakaway system (also called a drainage field) which disperses the effluent over a large area of land, or

- further treated by an additional process such as a biological filter before discharge to a drainage field or possibly a stream.

The soakaway system can often be the most troublesome component of the installation. The drainage channels can become blocked with foul solids and flooded because of poor design or construction. It is not just a matter of digging a hole in the ground; soil percolation tests are normally required for effective soakaway design. These design matters, including the required capacity of a septic tank, are addressed in three free publications available from CIRIA.<sup>41</sup>

Unlike a cesspit, a septic tank should not require emptying at frequent intervals but normally requires desludging about every 12 months. It is important to ensure that roof or surface water is not discharged to the septic tank: this will affect its treatment efficiency and may cause solids to flush out of the tank and block drainage channels. You may now need to obtain the consent of the environmental regulator for the discharge from a septic tank and the use of a drainage field.

### ***Other small-scale sewage treatment***

A wide range of packaged systems have been developed for the treatment of domestic effluent from single or several houses (in addition to septic tanks and cesspits). They may incorporate a septic tank and usually require electricity to operate either pumps or air blowers, or both. Some systems now incorporate a reed bed. This is an artificially created wetland planted with specially selected species of reed that have the ability to absorb oxygen from the air, release it through their roots and promote the growth of micro-organisms that help purify the effluent.

Some of these systems may treat effluent to a standard that is acceptable to the local environmental regulator for discharge to surface water. However, for existing systems it is important to check that consent has been granted and whether there are any conditions that apply to the consent.

The maintenance and operation requirements of these package plants or individual systems will depend on the manufacturer or designer. The householder should ensure that they know these requirements and the system's provenance.

### ***Regulations and responsibilities***

Those seeking to construct a new non-mains drainage system, whether it is a concrete septic tank or a prefabricated package plant, should first contact the area office of the environmental regulator. They will advise whether the system needs to be registered and if an Environmental Permit to discharge is required.<sup>42</sup> Building Regulations will also apply and advice should be sought from the Local Authority to obtain the latest advice on compliance.

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<sup>41</sup> (1) *Septic tank systems: a users guide*. (2) *On site sewage disposal: options*. (3) *Septic tank systems: design and installation*. All produced by CIRIA (The Construction Industry Research and Information Association)  
[www.ciria.org/service/AM/ContentManagerNet/Default.aspx?template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=66&ContentID=16011&TPPID=5891&AspNetFlag=1&Section=knowledgebase&ThisPage=3](http://www.ciria.org/service/AM/ContentManagerNet/Default.aspx?template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=66&ContentID=16011&TPPID=5891&AspNetFlag=1&Section=knowledgebase&ThisPage=3)

<sup>42</sup> [www.environment-agency.gov.uk/homeandleisure/118753.aspx](http://www.environment-agency.gov.uk/homeandleisure/118753.aspx)  
[www.sepa.org.uk/water/water\\_regulation/car\\_application\\_forms/septic\\_tank\\_registration.aspx](http://www.sepa.org.uk/water/water_regulation/car_application_forms/septic_tank_registration.aspx)  
[www.doeni.gov.uk/niea/water/regulation\\_of\\_discharges\\_industrial/septic\\_tanks.htm](http://www.doeni.gov.uk/niea/water/regulation_of_discharges_industrial/septic_tanks.htm)

Non-mains drainage systems are often shared by more than one household. Also, they may be constructed on land not belonging to the household; this is common for drainage fields, which may be sited on adjacent agricultural land. In these circumstances it is important to establish rights and legal responsibilities from the outset.

### **13 What not to dispose of down drains and sewers**

#### ***Pesticides, automotive fluids, garden chemicals, home maintenance materials***

Many potentially harmful chemicals can be used in the home. Examples of these are shown in the following table.

Pesticides in the house	Rat poison, fly killer, anti-fungal cleaning agents etc.
Home maintenance materials	Paints, strippers, varnish etc.
Garden chemicals	Herbicides, pesticides, animal repellents etc.
Automotive fluids	Fuel, oils, anti-freeze, brake fluids etc.

Chemicals discharged to drains are conveyed to the sewerage service provider's treatment works or to a septic tank where they may cause the following problems.

- Interference with the proper operation of the treatment works.
- Contamination of the treated sewage, which is discharged into the environment.
- Contamination of a receiving water used for the abstraction of water for drinking purposes and causing a problem for the treatment works.

Even if there is no short-term problem there is concern that some substances may bio-accumulate in aquatic plant or animal life resulting in long-term problems.

Note: it is equally important that chemicals and oils etc. are not disposed of down road gullies as surface water from roads etc. frequently goes direct to watercourses and can cause long term damage to the environment.

Local waste disposal authorities have a duty to provide places (usually known as either Civic Amenity sites (CA sites) or Household Waste Recycling Centres (HWRC centres)) where people resident in that area may bring items of household waste for disposal. There must be special arrangements for safe disposal of hazardous household waste including providing some places to which this waste can be taken free of charge. The Crop Protection Association has produced a Fact Sheet on Disposing of Garden Chemicals available from them or from their website.<sup>43</sup> The Pesticide Action Network (PAN) is another organisation that provides information on pesticides; their website<sup>44</sup> provides a list of local council facilities for disposal of pesticide waste.

We all have a responsibility to use such facilities and heed advice concerning safe disposal of hazardous chemicals and never to dispose down lavatories, drains or

<sup>43</sup> Crop Protection Association See the CPA website  
[http://gardencare.101test1.co.uk/ attachments/Resources/32\\_S4.pdf](http://gardencare.101test1.co.uk/attachments/Resources/32_S4.pdf)

<sup>44</sup> The Pesticide Action Network UK. See the PAN website at <http://pan-uk.org/disposal/>

near ponds, watercourses, ditches or near wildlife habitats. Also never to dispose of these materials by tipping onto soil, especially near to water supply pipes because of the potential for permeation through polythene pipes resulting in contamination of the water supply to the premises. This is common problem occurring with oil, petrol, and common solvents, which is first revealed by the taste and smell of water in the home.

***Waste sanitary and pharmaceutical items***

Sewerage systems, including privately owned septic tanks and cesspits, are designed to deal with urine, faeces and toilet tissue. Other items flushed down the toilet can lead to blockages in the pipes and cause flooding with foul sewage. These include cotton buds, condoms, tampons and tampon applicators, sanitary towels, panty liners and backing strips, cleaning wipes, disposable nappies, and incontinence pads. These should be placed safely in the normal rubbish bin. Waste sanitary and pharmaceutical items should, for health reasons, first be placed in bags before being put in the bin.<sup>45</sup>

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<sup>45</sup> More information on this problem is available from the ‘Bag It and Bin It Campaign’ at [www.bagandbin.org](http://www.bagandbin.org)

## 14 Contact details for organisations mentioned in the Guide

Organisation	Telephone no.	Internet
Association of Plumbing & Heating Contractors	024 7647 0626	<a href="http://www.aphc.co.uk">www.aphc.co.uk</a>
Chartered Institute of Plumbing & Heating Engineering	01708 472791	<a href="http://www.ciphe.org.uk">www.ciphe.org.uk</a>
Construction Industry Research and Information Association (CIRIA)	020 7549 3300	<a href="http://www.ciria.org">www.ciria.org</a>
Consumer Council for Northern Ireland	028 9067 2488	<a href="http://www.consumercouncil.org.uk">www.consumercouncil.org.uk</a>
Consumer Council for Water (CCWater)	0121 345 1000	<a href="http://www.ccwater.org.uk">www.ccwater.org.uk</a>
Crop Protection Association	01733 355371	<a href="http://www.cropprotection.org.uk">www.cropprotection.org.uk</a>
Department for Environment Food and Rural Affairs (Defra)	0207 238 6951	<a href="http://www.defra.gov.uk">www.defra.gov.uk</a>
Drinking Water Inspectorate for England & Wales (DWI)	030 0068 6400	<a href="http://www.dwi.gov.uk">www.dwi.gov.uk</a>
Drinking Water Quality Regulator for Scotland	0131 244 0190	<a href="http://www.dwqr.org.uk">www.dwqr.org.uk</a>
Drinking Water Inspectorate (NI)	028 9056 9282	<a href="http://www.doeni.gov.uk/niea/water-home/drinking_water">www.doeni.gov.uk/niea/water-home/drinking_water</a>
Environment Agency (EA)	03708 506506	<a href="http://www.environment-agency.gov.uk">www.environment-agency.gov.uk</a>
Foundation for Water Research (FWR)	01628 891589	<a href="http://www.fwr.org">www.fwr.org</a>
Northern Ireland Environment Agency (NIEA)	0845 302 0008	<a href="http://www.doeni.gov.uk/niea">www.doeni.gov.uk/niea</a>
Northern Ireland Water	08457 440088	<a href="http://www.niwater.com">www.niwater.com</a>
OFWAT (the Water Services Regulation Authority)	01992 822800	<a href="http://www.ofwat.gov.uk">www.ofwat.gov.uk</a>
Pesticides Action Network	0207 065 0911	<a href="http://www.pan-uk.org/">www.pan-uk.org/</a>
Private Water Supplies	-	<a href="http://www.privatewatersupplies.gov.uk">www.privatewatersupplies.gov.uk</a>
Scottish Environment Protection Agency (SEPA)	01786 457700	<a href="http://www.sepa.org.uk">www.sepa.org.uk</a>
Scottish Public Services Ombudsman (SPSO)	0800 377 7330	<a href="http://www.spsso.org.uk">www.spsso.org.uk</a>
Scottish Water	0845 601 8855	<a href="http://www.scottishwater.co.uk">www.scottishwater.co.uk</a>
Valuation Office Agency	03000 501501	<a href="http://www.voa.gov.uk">www.voa.gov.uk</a>
Water Industry Commission for Scotland	01786 430200	<a href="http://www.watercommission.co.uk">www.watercommission.co.uk</a>

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Water Regulations Advisory Scheme (WRAS)	01495 248454	<a href="http://www.wras.co.uk">www.wras.co.uk</a>
Water Research Centre (WRc)	01793 864650	<a href="http://www.wrcplc.co.uk">www.wrcplc.co.uk</a>
Water Services Regulation Authority (OFWAT)	0121 644 7500	<a href="http://www.ofwat.gov.uk">www.ofwat.gov.uk</a>
Water UK	020 7344 1844	<a href="http://www.water.org.uk">www.water.org.uk</a>
Which? (Consumer's Association)	01992 822800	<a href="http://www.which.co.uk">www.which.co.uk</a>