What can go wrong?
Drainage

Make sure you get this part of your project right with Andy Butchers' expert tips

It may not be the most glamorous part of a home building project, but an adequate and free-flowing drainage system is probably one of the most important things to get right. It's not a case of out of sight, out of mind: while most of the drainage will be hidden away underground, if it does go wrong, it can be costly and extremely disruptive to put right.

Conventional setups

Gravity systems are the most common choice, both to take foul water to the public sewer and for soakaways that deal with surface run-off (rain). There are other solutions for situations where you can't use standard techniques (more on these later).

It's vital that you and your team plan the drainage design thoroughly, as changing things halfway through is difficult and expensive. The lie of the land and position of the house are important factors, as there are strict design parameters with regards to the gradient at which both surface and foul drainage systems can be installed. If you can't meet the minimum fall, then some kind of pumped system may be required – which will have greater ongoing maintenance requirements.

The size of the house and nature of the surrounding landscaping will have a big bearing on the diameter and position of rainwater downpipes and gullies, as well as the capacity of the underground drainage system. The number of toilets, showers, baths and basins must be considered, too.

The pipe, bed and surround materials may also need to change depending on the location of the drain and its depth. For instance, plastic pipe with a pea shingle bed and surround may be perfectly acceptable at standard depths below ground. But setups closer to the surface, especially if they're very shallow and beneath a drive or road, may need to be in clay or iron with a concrete bed and surround to prevent crushing.

Tricky sites

Normally the foul and surface water drains are kept as separate systems. If your site or soil surveys suggest ground conditions won't allow for a soakaway or there's insufficient room on site, it may be possible to redirect surface water into the foul system. However, you'll need to obtain specific agreement for this from the relevant water authority. You might also be able to divert surface run-off into a water course; you'll probably need to arrange a discharge permit to do this.

More common these days is the use of rainwater harvesting (RWH) setups, where the surface water is stored in underground tanks ready for reuse around the property as grey water. The excess from here normally passes to a soakaway, which thanks to the RWH may not need to be as large as in conventional installations.

If a standard gravity setup is not possible, then you'll need to consider a storage or pumped solution. There are a number of these on the market, and they're often sold as packaged systems. Either the sewage is stored in a container and regularly pumped to the public sewer, or you could opt for a product that treats the foul water on site and passes it to a percolation area (solids will still need to be pumped into a lorry for disposal).

Common pitfalls

I've found the main area self builders make insurance claims with this part of a project is due to problems with the workmanship in laying the drainage system. A key part of any warranty inspection regime will be to establish that this element is free from defects; and it may bring issues to light.

Above: Inspection chambers are a crucial aspect of your drainage setup, allowing for ongoing maintenance

Seeing the pipe on the bed allows warranty inspectors to ensure that it's straight and the bed is correct. This is important because it reduces the possibility of bellies (where the pipe drops between joints or over an extended length). This is normally caused by poor preparation of the bed under the conduit, and if not corrected can cause constant blockages.

It's hard to believe, but sometimes pipes are actually connected wrongly (foul to surface and vice versa), the wrong materials are used or in some instances they're not even hooked up at all. Your drainage system may not necessarily be laid in one go, so it's important to keep records so you can ensure nothing is missed. You should also have the completed system air- or water-pressure tested prior to backfilling to identify any leaks (which might be caused by a failed joined or a faulty section of pipe, for instance).

MORE INFORMA TION

Andy Butchers is a building surveyor with over 25 years' experience in the construction industry – and regularly shares his knowledge to help self builders and renovators avoid and overcome issues on their projects. He is a director of Build-Zone Survey Services, which provides technical services for a number of warranty providers. Call 01732 744186 or visit www.bzss.co.uk to find out more.