



## PROBLEM PLOTS

### IS THE LAND SUITABLE FOR DEVELOPMENT?

Always ask yourself why land hasn't previously been developed, as there may be a good reason. There may be insurmountable legal problems or there may be services beneath the site that cannot be disturbed or built over. Alternatively, it could be down to 'bad ground'. There are now solutions which could combat these problems, and many of those solutions, which may have precluded development in the past, are now, with rising property values and modern cost effective measures, viable.

### CONSTRAINTS AND SOLUTIONS

Where there are trees in association with clay ground conditions a problem known as 'heave' can occur. Trees take vast amounts of moisture from the subsoil and the ground beneath them to quite a depth is always dry and friable. When clay gets wet it expands quite considerably. If a tree dies or is removed then it ceases to take the moisture from the subsoil and when this expands it has nowhere to go except upwards, causing the ground to rise. If foundations are not built to withstand this pressure they can crack. The simple solution is to deepen the foundation trenches of the building to a depth where the actions of the tree are limited, usually between 2.5 metres and 3 metres, and fill them with concrete. This can be further refined by lining one or both sides of the trench with a compressible material to absorb the ground movement or by the introduction of a 'slip' membrane comprising two sheets of heavy duty polythene down the side of the trench.

At a certain point, as the depths and the amounts of concrete increase, this solution ceases to be viable and it is better to think in terms of a 'pile and ringbeam' foundation. Piles can be dug, bored or driven into the ground and, these days, the rigs that are needed can be mounted on the back of a Landrover type vehicle. The piles go down to stable ground and are left proud of the surface to support a series of reinforced concrete beams, spanning from pile cap to pile cap, known as 'ground beams' or 'ringbeams', upon which the dwelling is built. Ringbeams and pile caps can be supplied as prefabricated units rather than being cast on site. Piled foundations can also be used where the ground conditions near the surface are unstable due to

### TIP

Don't disregard 'problem plots' as there may be a solution to make the plot viable



## FLOODING

Properties that are liable to intermittent flash flooding can be protected, to a degree, by earth bunds or barriers plus a sump and pump disposal system. This works by having a series of perforated pipes set in the ground leading to a sump with a dual pump to send any water back outside the barrier. The pumps are designed to cope with up to 75mm of rainfall per hour but they have to have somewhere to dump the water and, if the flood gets above the barrier it will cease to have any effect.

The biggest single problem with flooding is either the mixing of the sewage with the floodwater, or the backing of the drains into the house. The first of these problems can be mitigated by having any private sewage systems situated outside the bund. The second can be solved, except in the case of a flood breaching the bund, by the installation of non-return valves in the foul drains. It may be advisable to commission a Flood Risk Assessment, which although costly, will reveal whether any issues are surmountable.

previous infill, in ground where there is a high water table, or where the top layers do not provide good bearing.

A foundation solution for filled ground could be that of 'raft' foundation. Filled ground is ground that may experience differential settlement or situations where although the ground has good bearing, geological conditions below it (such as mining) mean that from time to time the ground might shift. With this, the ground is excavated and then infilled in layers with consolidated hardcore shaped to receive a reinforced concrete raft. This forms the subfloor of the dwelling which has the outside edges and the areas beneath supporting walls thicker in order to support the superstructure.

Building beside a river or on the floodplain is usually discouraged, but if planning has been granted there are solutions that exist which can contest the problems of flooding. One solution is to raise the floor level above the known maximum flood level with all underbuilding designed to allow the free passage of water. Essentially, this means that the house is built up on brick piers. The area beneath the floor can be used for storage or parking but at no time should it be enclosed.

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One of the most common problems that self builders are likely to come across, is a site that used to be an old filling station. Local village stations are no longer economically viable and it is these older premises that are the most likely, to have leaking concrete or brick tanks. As long as the plot price reflects the fact that it will need cleaned up, it needn't rule the opportunity out altogether. The solution may mean digging out the contaminated soil, carting it to an approved dumping site and replacing it with fresh soil. But, this is an expensive option, in cash and environmental terms, with costs ranging from £20,000 - £30,000.

More commonly, "knock down and rebuild" plots can have contamination issues. However, unlike a filling station scenario, the costs to rectify this are significantly less.

Another way of doing things is to cap the site with an impermeable layer, or to treat the soil in-situ with processes referred to as 'bio-remediation'. This is where microbes are cultured or encouraged to proliferate on site to break down the long hydro-carbon chains and neutralise the problem.



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