



Highways authorities must look below the surface

If local authorities want to avoid the pain and cost of yet another flood disaster, they must have their drainage infrastructure mapped, says Rod Beardshall, Engineering Director at Exor.

As Cumbria counts the gargantuan cost of restoring its bridges, homes and businesses after last November's floods, the finger-pointing is well underway. Just how could this happen – again – after all of the recommendations made in the DEFRA/Pitt Report, following the similarly devastating floods across Gloucestershire in 2007? Wasn't Britain supposed to be on alert now, proactively ready with pre-emptive defences?

Apparently not. But we shouldn't be surprised. The sheer work that this demands is colossal, and not something that can be achieved overnight. The recent floods were exacerbated by inadequate and damaged water drainage systems. Part of the reason such community impacts keep happening (the UK has now had three 'once in a lifetime' events in less than five years) is because the complex underground infrastructure that makes up this vital system is poorly understood. As such, how can it be managed effectively?

Much of the country's drainage system is around 150 years old, and is poorly mapped, so that no one really knows what lies where, how it's connected together, and where problems may lurk. This is why, when an emergency situation presents itself, it so often catches the infrastructure authorities off guard. When the Local Authorities post flood warnings, the best they can do is rally the emergency services to be on standby, and begin stockpiling the sandbags. The issue of who's responsible has undoubtedly been a significant part of the problem, though Pitt Report recommendations and subsequent Bills that are going through Parliament are now providing greater clarity, specifically ensuring that Local Authorities and local Highways departments are made directly accountable for the upkeep of the infrastructure in their own areas. Avoiding the brunt of future incidents relies on decisive action being taken now – even if this will take a lot of time and investment. The first priority must be to build up a detailed map of local drainage networks, showing how these intersect and interact with other key infrastructure components, such as highway embankments. Only by knowing what's there, and where vulnerable/problematic assets are, will the local authorities be in a position to focus investment and proactively avert future problems. This is a huge task

but, if it is never started, it will never be completed, and this is the only way councils will be able to effectively manage and reduce risk. Gloucestershire and Wiltshire are among the counties that have now heeded the warnings and begun the process of mapping out their drainage infrastructure, so they can focus proactive repairs in known areas of risk. By acting 'early', they have availed themselves of government grants from DEFRA. By recording and mapping the sources of common public complaints (about excess surface water, blockages and low-level flooding), they are gradually building up a picture of potential problem areas, so they can act now to avert more serious incidents.

The technology is also available now to send miniaturised gyroscopic (instruments now in production derived from guidance technologies) devices down into the drainage systems to track what's there and identify emerging problems in time to mitigate risk. By combining such facilities with specialist infrastructure and asset mapping and planning software, the Local Authorities are afforded their best chance of getting on top of the situation once and for all. The Flood and Water Management Bill, which has now been introduced into Parliament and is highly likely to be enacted, will ensure that local authorities can no longer plead cost and lack of resources as excuses for not improving their infrastructure maintenance and proactive flood risk management. DEFRA will now require Local Authorities to step up to their responsibilities in much the same way that the Utilities have a duty of care to keep detailed records of their underground assets, to justify capital expenditure plans to regulators. Their duty of care extends to good record keeping of their assets, something that will now be asked of Local Authorities. This is likely to lead to the creation of more local 'Surface Water Management Boards' including District Councils, who act as the planning authority in their area, so that the burden for developing asset management plans extends beyond Local Highway Authorities and contractors. But, to be able to understand the risk of downstream impacts, it is imperative to be able to visualise and understand the network below ground, as well as the surface details. Which is why Local Authorities across the UK and Ireland are, for once, being encouraged to bury their heads underground.