

## **Improving the efficiency of existing Drain and Sewer systems – Is it truly possible, and is it now sustainable?**

The build-up of sedimentation, the obstructions which restrict our sewers, and even more significant, blockages caused by waste material or congealed Fats Oils and Greases is a huge problem effecting most drain and sewers. The problems are made worse by unflushables such as wet wipes, sanitary products, babies' nappies and so much more. These issues effect the individual drain or sewers performance and impact on the wider network or catchment, a fact that can be of no real surprise to anyone! These problems are too frequently used as a justification for widely publicised pollution and flooding events and the devastating effect that these have on homes and businesses, along with the environmental damage caused to Rivers and Watercourses. This will also be broadly understood and unfortunately accepted as unavoidable by many, even after witnessing the significant fines incurred by Water Utilities for the damage caused and the frequently repeated failures achieving satisfactory compliance.

Some of the reasons for waste build-up may also be appreciated. Aging drains and sewer pipework which deteriorate over time. Wear and tear, structural failure, variations in as-laid pipe gradients caused by factors such as, ground settlement, or localised disturbance caused by adjacent excavation which is undertaken for a multitude of reason. These all contribute to the significant loss of self-cleansing velocity, and these also effect a high percentage of our sewers. Also factors such as the increased load and the ongoing expansion of sewerage networks or catchments to accommodate the need for new homes, resulting in a further reduction in hydraulic performance. These are indeed important factors, but a high percentage of these issues can be accommodated, and the problems averted without the need for replacement or cost remediation.

However, few people appreciate the magnitude of deficiencies that are caused by nothing more than a lack of effective preventative maintenance. Deficiencies that are incorrectly blamed on the defects outlined previously, because blaming these defects attract far less criticism or public outrage.

The improvement that could so easily be achieved right now for minimal investment is huge, delivering benefits that far outweigh the costs and consequences of any current reactive maintenance solutions which continue to be sporadically used. Current reactive maintenance is limited and achieves only localised, partial dispersal of blockages or the build-up of silt or waste matter. High pressure water jetting widely used, is performed at thousands of locations daily throughout the UK. These techniques require the use of huge quantities of valuable mains water and are conducted using some of the most damaging HGV vehicles to use the UK roads. Significant damage is all too often caused, because of harmful consequences of these outdated aggressive techniques. This causes otherwise minor pipe defects to escalate unnecessarily, resulting in partial or even complete pipe failure or at the very least, in a reduction to the operational life expectancy of critical sewer infrastructure. Avoidable defects also occurs closer to ground level when the exceptionally heavy vehicles used, cause damage to our roads, footpaths, verges, other shallow utilities and more worryingly of course, affect the quality of the air we breathe.

There is now an alternative. A simple sustainable solution that is designed to replace reactive maintenance with a sustainable preventative maintenance regime that delivers continuous and perpetual cleansing. A solution that delivers benefits including increasing underperforming hydraulic efficiency throughout any catchment. Cleansing is conducted using nothing more than the sewer effluent passing through the system. This solution uniquely uses no external power supply, is entirely

carbon neutral and has no impact on sewer or above ground damage resulting is absolutely no adverse problems to either drain or sewer infrastructure or the wider environment. The cost benefits to Utilities and Authorities etc., and to Bill paying customers are huge both in the short and long term as these solutions have already demonstrated an ability to perform for many years with minimal requirement for maintenance. Failsafe capabilities and the ability to monitor performance and the need for maintenance can now easily be achieved using the data logging equipment that is now being widely deployed throughout a high percentage of public sewer systems.

The solution, “Flusher2” is a unique technology, designed, trialled, and developed resulting from extensive work conducted in conjunction with Water utilities and others to address and resolve some of the most significant problems effecting public sewers over more than 30 years. Flusher2 has been enhanced, now automatically delivering continuous cleansing, mobilising sedimentation, and preventing the formation of blockages. Waste matter is mobilised for the entirety of its journey, carrying it instead to receiving treatment works or to strategically located interceptors where it can be effectively abstracted.

By keeping sewers in a constantly clean state, and hydraulically efficient, subsequent prolonged periods of rainfall or high intensity storms result in reduced frequency of CSO discharges. But for the unavoidable overspilling of excess flows, results in the discharge of a significantly diluted concentration harmful effluent as sedimentation is continuously removed from the catchment, and no longer relies of storms provide to only effective flushing opportunity to rid the catchment of waste accumulated over a prolonged period. The benefits extend to reduced property and surface level flooding. Underperforming sewers, also benefit from this technology as pipe deficiencies can in some cases be overcome, extending the life expectancy of failing parts of the sewerage catchment. Pipes affected by backwater problems, where the level of flow within a receiving sewer or drain prevents a lateral branch from effectively discharging, can also be alleviated, using Flusher2 to phase the release and the effective operation of various parts of the catchment. Bellies and backfalls which would otherwise require replacement, may also be resolved by inserting a low cost Flusher2 device, avoiding costly rehabilitation.

The need for change is clear. The shortcomings of existing reactive maintenance methods when compared to the wide-ranging benefits offered by new preventative maintenance techniques demand action. Public pressure and influence is clearly needed to drive those responsible for making these changes, to do so in a timely fashion. Authorising Bodies, Regulators, Environmentalists, pressure groups and specifiers, must now unite to challenge privately owned Water Utilities, Authorities, and others responsible for maintaining Drains and Sewers. Those unfortunately that directly suffer the repeating consequences of flooding, or contaminated watercourses, should add their own considerable collected voices to this demand for change. MP's, Journalists and those with a meaningful platform via social media, should add their influence on this important agenda. We can no longer allow profit driven organisations to hide behind mistruths. Its time for them to accept their own shortcomings and embrace effective and sustainable remediation methods. Failure to do so should result in escalating penalties and more serious action including the loss of the right to provide Sewerage services, with others more willing to embrace change, invited to extend their operational areas.