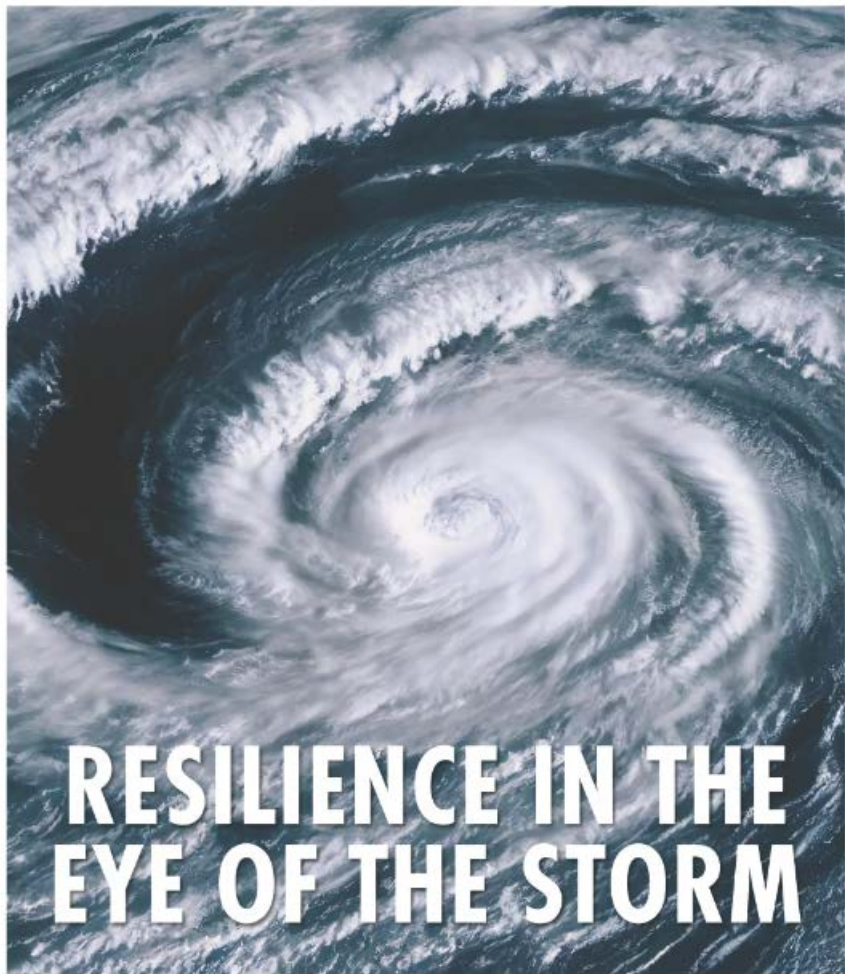


The Environment

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CIWEM



RESILIENCE IN THE EYE OF THE STORM

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THE IMPORTANCE OF SILT



Silt shouldn't be overlooked when carrying out works near or in water, says **Leela O'Dea** C.WEM, co-founder and technical director at Frog Environmental

Silt and clay are fractions of our soils which cause environmental damage when in water. When silty water enters a watercourse, lake or reservoir, it causes pollution which impacts the aquatic ecosystem, increases flood risk and is detrimental to water quality. Silt has a tiny particle size of between 0.02 and 0.63 µm (micron). Surface water runoff can erode exposed soils and entrain these tiny, energy-limited particles into water, where they can travel a long distance and remain in suspension.

As well as its damage to our environment, silt pollution brings significant costs and reputational harm to the business doing the polluting. The 'polluter pays' principle means businesses can be prosecuted and fined, and are responsible for clean-up costs. But silt pollution can be avoided with forward planning, good onsite surface water management systems and regular monitoring.

WHAT ARE THE PRIMARY SOURCES OF SILT?

Land-based construction activities, such as groundwork that strips soil and creates excavations and stockpiles, are a primary source of silt exposure and disturbance. When it rains, silts become mixed with water and can reach a precious watercourse through pathways such as drainage and surface water runoff.

Water-based construction activities such as headwall installation, bank protection or realignment of a channel risk disturbing the soils on the bed and bank of the watercourse that can be immediately mobilised by the flow of water. To minimise risk when carrying out construction work, best practice is to minimise silt disturbance.

WHAT ARE SOME INNOVATIVE TECHNOLOGIES OR APPROACHES FOR SILT MANAGEMENT?

Securing new silt control interventions over the past decade has been critical to supporting the industry with improved water management. Using simple and cost-effective products, we

have developed techniques to treat and capture silt to separate the solids from water. This results in clean, clear water entering our watercourses, with silt as a byproduct that should be contained on site.

Gel flocculant has been a game changer for silt and clay impacted sites. Its unique composition treats flowing water, binding together the tiny silt particles so that they are removed from suspension. Gel flocculant can be deployed into site ditches in a solid block form, using gravity to treat multiple sources of water before it reaches attenuation ponds. Alternatively, the blocks can be loaded into a pipe reactor mobile water treatment dosing unit. This can be used with a pump or under a gravity feed.

We manufacture and supply 100 per cent biodegradable mats (FlocMat™ and SiltMat™), which are used to capture and trap silt, as well as for lining ditches and polishing channels.

Water-based construction activities requires further tools to help mitigate pollution. We are the UK's only supplier of bubble curtains using BubbleTubing® technology, which has won awards for its performance in helping mitigate pollution including sound, silt, oil, litter, weed to name a few. It also provides highly efficient aeration, which is often lacking during water-based operations.

All of our products can be incorporated into a surface water management plan.

HOW IS FROG ENVIRONMENTAL'S APPROACH DIFFERENT TO TANK-BASED WATER TREATMENT SYSTEMS?

Unlike with a tank-based system often installed for a temporary period, our technical team works with a site and makes use of existing surface water management infrastructure such as ditches and ponds to treat silty water before it is discharged from site. Where possible, we work with natural coir products and safe, non-toxic flocculants that are easy to deploy and can be scaled to suit any site size, geology or

topography. We also design gravity-fed water treatment solutions where possible, removing the reliance on pumps, thereby saving on energy and associated fuel and hire costs. Our products can be used in isolation or alongside a model using a tank.

Our approach is to encourage sites to adopt a rain-ready system which provides them with year-round protection against wet weather. Because often the damage is done after the rain comes, we offer free CPD training to help upskill the industry, and to encourage proactive planning and product deployment.

WHAT ROLE DOES MONITORING AND ASSESSMENT PLAY IN EVALUATING THE EFFECTIVENESS OF SILT MANAGEMENT STRATEGIES OVER TIME?

Construction sites are dynamic environments: new activities and environmental influences impact surface water management requirements daily. Monitoring the volume and quality of any surface water leaving site is not only a requirement of a permit to discharge water, but provides an important management framework for the site team to establish and prioritise actions.

All water treatment systems require ongoing maintenance to ensure performance is optimised. The silt that is captured needs to be managed in accordance with the materials management plan.

HOW DO CLIMATE CHANGE AND EXTREME WEATHER EVENTS IMPACT SILT ACCUMULATION AND MANAGEMENT STRATEGIES?

The last five years have seen new records of severe weather events. The ground is saturated and water tables are high, meaning that natural infiltration is limited, which in turn is contributing to greater surface water runoff. Silt pollution is now a year-round risk. A rain-ready approach must start with early planning and preparation, including calculating surface water volumes and how water is moved and collected onsite for the construction phase of the work. **o**

Visit the team at Flood & Coast (stand number G26), view their website, frogenvironmental.co.uk, or contact them on 0345 057 4040 for a free initial consultation.

