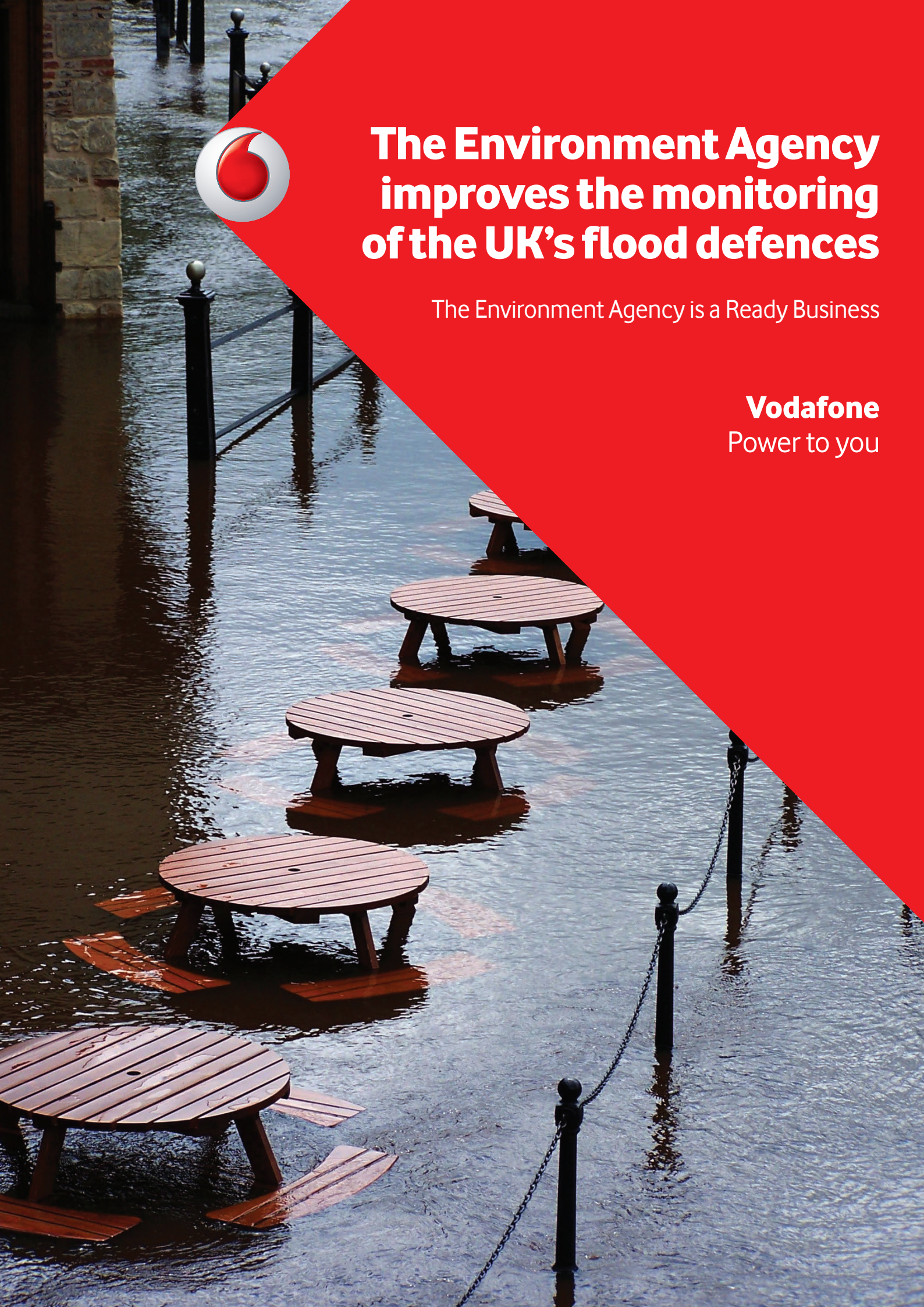




The Environment Agency improves the monitoring of the UK's flood defences

The Environment Agency is a Ready Business

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The Environment Agency deploys camera monitoring to remote locations, helping better direct the response of field engineers, using Vodafone M2M

In December 2015 the UK experienced its wettest month in a century, which continued into the New Year. About 16,000 houses in England were flooded and it is estimated repairs will cost £3m and could take a year to complete.

Across the European Union the cost of flood damage is expected to rise from €4.5bn to €23bn per year by 2050. Climate change and changing weather patterns are expected to create a rainier Europe, with heavier, more damaging downpours.

The challenge

Assessing flood risk, preparing flood defences

In the UK, the Environment Agency (EA) is at the forefront of our flood defences. It assesses flood risk and maintains the country's flood defences. The EA must be at a constant state of readiness.

"Flash flooding has changed the way we operate," says Mick Robinson, Technical Advisor FCRM (Flood and Coastal Risk Management) at EA. "Intense downpours can happen anywhere at any time, so we need to be able to respond quickly and effectively."

The EA manages more than 30,000 bridges, culverts and grids, all of which play a role in managing flooding. Culverts allow water to drain off harmlessly, steering flood water into rivers and drainage systems. These culverts cannot fail.

Traditionally, this infrastructure was maintained via a scheduled series of service visits: engineers would regularly check culverts for blockages. A blocked culvert could cause flood water to back up, flooding residential areas.

“Many of these cameras are in river valleys, where connectivity is not great. We've beaten this with the Vodafone Global SIM.”

Mick Robinson,
Technical Advisor FCRM,
Environment Agency

EA wanted to improve the efficiency of these service visits, enabling engineers to be ready to move at a moment's notice. It wanted to prioritise visits and to build early-warning systems. Many of these culverts are in remote, hard to reach locations. They require a great deal of time and money to visit.

"If our defences are being overloaded we want to be better able to direct ground responses," says Robinson.

The solution

Remote monitoring to help direct field engineers

The obvious solution is remote visual monitoring – cameras sending regular images of infrastructure, the bridges, culverts and drains, to support regular visits by engineers. The images can be viewed centrally, or by engineers on the move via a mobile device. They provide an early warning system and better direct service visits.

With previous solutions, the difficulty had been in powering, maintaining and ensuring the necessary connectivity to each camera. In the East Midlands region, EA is using a new solution that combats each of these issues. It is working with iDefigo Group, a remote monitoring specialist, and Vodafone's Global M2M platform. A network of smart cameras, each connected to a central platform and powered by small, solar panels, provide regular, accurate updates.

"Many of these cameras are in river valleys, where connectivity is not great. We've beaten this with the Vodafone Global SIM," says Robinson.

“ The emphasis is ‘think big and act early’. We’re now far more vigilant. Our alert state is better. ”

Mick Robinson, Technical Advisor FCRM, Environment Agency

EA has placed the cameras in recognised trouble-spots and at its most critical locations. The cameras send regular photographic updates; field engineers can view details through an online portal, from anywhere, anytime. The system is meshed with EA’s other field telemetry, allowing engineers to monitor river levels, high tides and more. It provides a real-time picture of water levels and the state of EA’s flood defence infrastructure.

He says the smart camera network has not entirely replaced service visits but have improved planning and efficiency: “The emphasis is ‘think big and act early’. We’re now far more vigilant. Our alert state is better.”

Robinson expects the future to see greater use of remote monitoring, from multiple sources. The iDefigo platform allows for the integration of additional feeds and multiple devices.

“What started as flood defence, has in the last 10 years changed to flood risk management,” says Robinson. “Our focus is on managing risk. An extreme event provides new challenges, but by making sure our assets are performing as they’re expected to, we are better placed to overcome and meet these.”

The bottom line

- Allows the Environment Agency to better plan emergency response and assess flood risk, from a single platform
- Improves productivity of service engineers with a solution integrated, in real-time, with mobile devices
- Provides the scale to connect thousands of remote assets, with the necessary national coverage

About the Environment Agency

- UK government body charged with planning the UK’s flood defences and assessing flood risk
- Responsible for the maintenance and management of 30,000+ FCRM assets which include culverts, grids and flood control structures
- Wants to improve effectiveness of ground response. Using remote monitoring technology to direct resources and protect assets
- www.gov.uk/government/organisations/environment-agency

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