From: **Lead Compliance Officer**

To: Kent and Essex Inshore Fisheries and Conservation Authority **-** 28 January 2025

Subject: **Remote Electronic Monitoring (REM) applications in the KEIFCA district**

Classification: **Unrestricted**

Summary: The paper provides an overview on Remote Electronic Monitoring (REM) applications, results of a trial on two cockle vessels in the 2024 fishery, and outlines aims to introduce REM across the remaining cockle fleet in 2025

Recommendation: This report is for **COMMENT** and **NOTING** only

Introduction – what is REM?
Remote electronic monitoring is a catch all term that refers to integrated on-board systems that may include cameras, gear sensors, video storage, and Global Positioning System (GPS) units. These combined systems can capture videos, positions, speed, bearing, gear deployment and other information to monitor fishing activity remotely. The recent integration of machine learning and artificial intelligence software with REM systems makes their applications even more far reaching in scope of the data they can record and the resulting benefits they provide to fisheries managers and scientists.

Technological monitoring solutions for scientific research and fisheries management are the international direction of travel and are part of a wider trend towards digital transformation. REM has been developing as a fishery monitoring tool for nearly 20 years and has been used a compliance tool in Canada for over 15 years. More recently, it has been increasingly adopted by fisheries managers worldwide due to advances in communication technology and lower costs. Countries like Australia, Canada, the USA, and New Zealand have demonstrated REM's effectiveness in compliance monitoring and improving scientific data collection.

In the UK, Defra is working with devolved administrations to deliver a vision for fully documented fisheries in UK waters. REM is an integral part of this, providing valuable data for fisheries management to achieve sustainability. This drive

aligns with commitments under the Fisheries Act 2020, the Habitats Regulations, and the UK Government's 25-year Environment Plan. The EU Commission and neighbouring coastal states are also exploring REM, and the UK aims to lead these efforts, promoting data-driven fisheries management in the future.

National rollout of REM is currently being consulted on by DEFRA, however this national REM project will prioritise the largest commercial vessels first, such as those in the pelagic trawling sector. In the meantime, Defra are supportive of KEIFCA and other IFCAs working to implement REM at a local level for specific fisheries and have emphasised that interoperability between various emerging REM systems is crucial.

REM for inshore fisheries

Natural England produced a report in 2022 on a risk-based approach to Remote Electronic Monitoring for English inshore fisheries, assessing the risks posed by different fishing gear types to the wider marine environment (through the Marine Strategy Framework Directive "Good Environmental Status" descriptors), and evaluating how various REM could effectively mitigate these risks. The report identified that KEIFCA's larger (over 10m) cockle dredging vessels are a high priority fleet for REM installation.

Cockle fishing in the Kent and Essex IFCA district is subject to tight spatial management measures and suction dredges used are widely considered to be relatively high impact. The fishery takes place within multiple Marine Protected Areas which require Habitats Regulations Assessment (HRA) approval from Natural England, and for this to be approved there must be confidence in compliance, a comprehensive monitoring regime, and calculation of seabed impact.

The Thames cockle fishery is currently monitored through a combination of physical observation and electronic tracking. Physical observations of fishing activity are can only be made by patrol vessels crews at sea, and despite regular sea patrols during the fishery officers cannot directly monitor all areas of the Thames around the clock. The lack of 24/7 patrol vessel coverage is bridged by an older form of electronic tracking technology called Vessel Monitoring Systems (VMS); however, the scope of VMS derived data is far more limited than that of REM systems.

Thames cockle vessels are relatively large for inshore vessels (typically 14m) and use potentially high impact gear inside an area with tight spatial management and multiple MPAs. They are also operating in a high value, exclusive fishery with a limited number of licences, and as such, these vessels are prime candidates for the initial rollout of REM in the KEIFCA district.

The application of REM is not necessarily limited to the cockle fishery however, and with emerging fisheries for manila clams REM could be extremely useful too. Manila clams have only been fished on a trial basis in the KEIFCA district, and a significant challenge to opening a regular annual fishery will be KEIFCA's ability to accurately monitor fishing activity and ground impact, due to the clam ground being located in various Marine Protected Areas in the same manner as the cockle fishery. If the emerging manila clam fishery were to be fully documented with REM, the case for securing HRA approval would be very strong indeed and would additionally demonstrate KEIFCA's ability to deliver world-class fisheries management.

Work has already begun to introduce REM in the inshore environment on a trial basis. REM has been trialled successfully in Devon and Severn IFCA mobile gear fisheries, and in 2024 KEIFCA completed successful REM trails on two vessels in the Thames cockle fishery which will be covered in the next section.

2024 REM trial on cockle suction dredgers
During the 2024 Thames cockle fishery two licenced operators agreed to trial REM devices on their vessels. These devices are provided by two companies: firstly, Fastview360 who specialise in providing mobile camera systems that are built for harsh industrial environments; and secondly Rewire Security, a specialist vehicle tracking company that also deliver a range of specialist electronic sensors. The result is a device that incorporates a tracking device similar to VMS but with a far higher resolution, but unlike VMS it additionally comprises Bluetooth gear sensors to detect when the dredge is deployed or retrieved from the water, and CCTV cameras which record real time footage of the dredge, riddle and hold.

Both companies have worked together in collaboration to develop a unique system that uses the sensors to create "incidents" of fishing activity – which are activated when the gear is being deployed or hauled. These "incidents" trigger cameras to start recording, and the device automatically retrieves the videos and send an email alert to KEIFCA. CCTV cameras are only directed to record footage of the fishing gear, and do not record other activity of the skipper or crew on board the vessel. Rewire Security's technology is tried and tested in the haulage industry, and since branching into fisheries has established REM projects with Jersey fisheries department, Devon and Severn IFCA, Cornwall IFCA and Marine Scotland.

FastView360 have also been developing artificial intelligence software to analyse video footage to maximise data outputs, and would be able to develop a machine learning which would automatically measure the volume of cockles in the hold. Results from the trial on two cockle vessels in 2024 are extremely promising, with the devices providing high-resolution tracking data and accurate gear in water detection which is corroborated by high quality video footage of the fishing gear. Already we can see that REM would provide clear benefits to both science and enforcement: providing high fishing data while simultaneously promoting compliance throughout the fleet due to the provision of objective video evidence of fishing activity.

Next steps
KEIFCA ultimately aim to roll out REM in across the entire cockle fleet. From an enforcement standpoint, REM stands to drive improved compliance and provide the best possible evidence in future investigations, while reducing the need for costly FPV patrols to monitor the cockle fleet at sea. In a broader context, REM will also be able to provide our scientists with accurate data on fishing effort and catches, which can in turn be used to implement increasingly flexible spatial and temporal management measures that would be simply unworkable without this technology. Vessel owners would also have the option of installing additional cameras to improve the safety of the crew and vessels and reduce downtime, with the possibility of live streaming mechanical issues to engineers ashore to help problem solve and keep the vessel at sea.

As with any device, there are installation and upkeep costs. In 2025, we will explore options to fund the purchase and installation of the hardware across the

Thames cockle fleet to try and minimise financial burden on licence holders. We would aim to have devices installed across all licenced vessels on a voluntary basis during the course of the 2025 fishery, with a view to bringing in a licence condition in 2026 to mandate that all licenced cockle vessels must be fitted with a functional REM device to participate in the fishery.

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