Saving lives through enhanced hazard forecasting and public messaging at Crantock beach

sweep

Impact Summary

A wide variety of stakeholders across the South West and beyond, have approached the SWEEP team, keen to benefit from their cutting-edge science and collaborative approach to tackling coastal hazards. Applying their Operational Water and Wave Level (OWWL) science and approach more broadly, these impact summaries highlight the key benefits delivered from this work during SWEEP.

World 1st
community-led, science-based, smart beach safety technology

Catalyst for:
31 beach rescues (or help given);
91 advisory notices

Delivery of **innovative RNLI water safety measures** accelerated

Ways of Working

- Innovative Knowledge Provision
- Effective Collaboration
- Capacity Building
- Tailored Decision Support

Why it mattered?

Crantock is a popular beach on the north coast of Cornwall that has several significant bathing hazards, including rip currents, estuarine currents, headland boundary rip currents, and powerful breaking waves.

Following storms in 2013/14, the River Gannel broke free from the engineered wall holding it in place against the north headland and now runs freely across the beach to the sea.

Having carved deep troughs in the beach, and with estuarine currents that flow in multiple directions, this is a significant risk for beach users who can easily find themselves out of their depth.

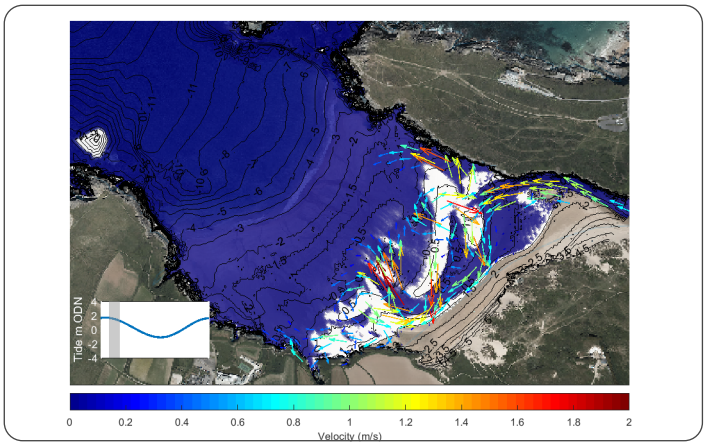
The RNLI have been at Crantock since 2001. They have seen a steep rise in safety incidences with rescue and incident assist figures of less than 40 pa in 2014, to over 190pa in 2018; including two fatalities when lifeguards were not present.

The lifeguard service is under increasing pressure and is keen to benefit from new innovations that deliver improved hazard data, and more effective methods of communicating this to the public, to enable better decisions about how to use the water safely.

What we did

Working closely with the RNLI, Crantock Steering Group and wider community groups, the SWEEP team delivered daily hydrodynamic bespoke forecasts for Crantock Beach (providing up to 5-days pre-warning of peak bathing hazards) and forecast outputs for potential public-facing usage.

Drawing on these, and working with the wider project team, SWEEP contributed to the development of new innovative digital public-facing beach hazard warning signage now installed in Crantock's car park. See Crantock Beach Hazard Forecasting film.



RNLI at Crantock, north Cornwal

Impacts & benefits delivered

SWEEP's work with the RNLI and wider Crantock partners has been truly ground-breaking and has delivered a wide range of impacts:

Knowledge

Delivered new knowledge and built capacity: SWEEP's hydrodynamic model provides new, localised, more-timely, accurate and repeatable data not previously available to the RNLI at Crantock, improving on existing sources. SWEEP's forecasts offer multiple hazard information in one place, supporting more efficient decision making, and RNLI capacity has been increased via the transference of local rip current hazard science expertise. The OWWL model has essentially 'automated' a lifeguard's brain by providing the bathing hazard foresight of an experienced lifeguard up to 5 days ahead; accessible to the public and beach safety champions, especially when lifeguards are off-duty.

Attitudinal/Capacity/Facilitation

Informed attitudes and cultures: by independently verifying the existing water safety knowledge of experienced lifeguards, SWEEP's forecasts have boosted confidence in the current RNLI Crantock service. It has also catalysed new ways of thinking about how best to deliver ground-breaking public-facing beach safety messages, especially in the mornings and evenings when lifeguards are off duty and risks for water users are high. SWEEP has also played a key role in harnessing local collaborative community life-saving efforts – already enhancing beach safety, and key for sustaining this into the future.

Health & Wellbeing

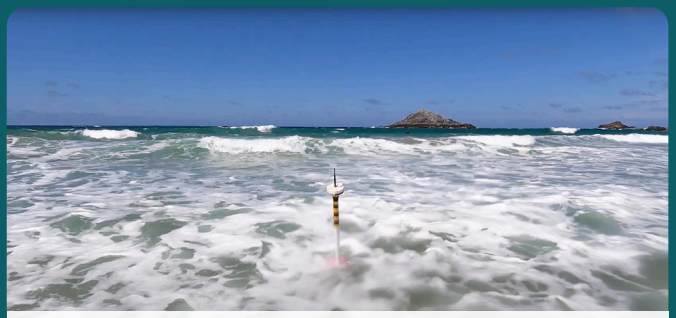
Informed and enhanced RNLI practice, ultimately saving lives: SWEEP's work at Crantock has contributed to the fast-tracking (delivered in 6 months, following 5 years of discussion) of this ground-breaking intervention delivering public-facing, digital beach hazard messaging for safer use of the sea. The establishment of the Surf School and Crantock Surf Club WhatsApp Group contributed to 31 'out of hours' rescues and assists, and 91 'out of hours' advisories during the Crantock 2021 season.

Policy & Legislation

The RNLI view Crantock as an exemplar of an innovative community approach to lifesaving: Crantock's Beach Safety Plan now includes digital signage as part of its suite of water safety interventions. Following further impact evaluation, and product development, the RNLI will consider incorporating this into organisational strategy, as part of a blended water safety service for other sites around the South West and UK. Cornwall Council have committed further funding to extend the lifeguarding season at Crantock by two months.

> *"This SWEEP project is exactly the sort of work RNLI like to align with. We've been impressed not only with the well-researched, cutting edge science the team have brought to this forecasting tool, but the professional way in which they have thoroughly tested and validated the data with local knowledge and experience, and worked with us to track and evidence impact."*
>
> **Adrian Carey, Head of RNLI SW region**

> *"SWEEP has played a pivotal role in this innovative approach to water safety at Crantock and it has already significantly improved the RNLI service here. We are committed to further refining, evaluating and, we hope, rolling-out this work going forward."*
>
> **Steve Instance, RNLI SW Water Safety Lead**



Monitoring equipment being used at Crantock Beach

> *"The SWEEP forecasting outputs have provided us with an exciting new opportunity to deliver public-facing digital beach hazard messaging at Crantock, particularly when lifeguards aren't on duty. This has been ground-breaking work and as far as we know, a world first."*
>
> **Steve Instance, RNLI SW Water Safety Lead**

Forecasting equipment at Crantock Beach

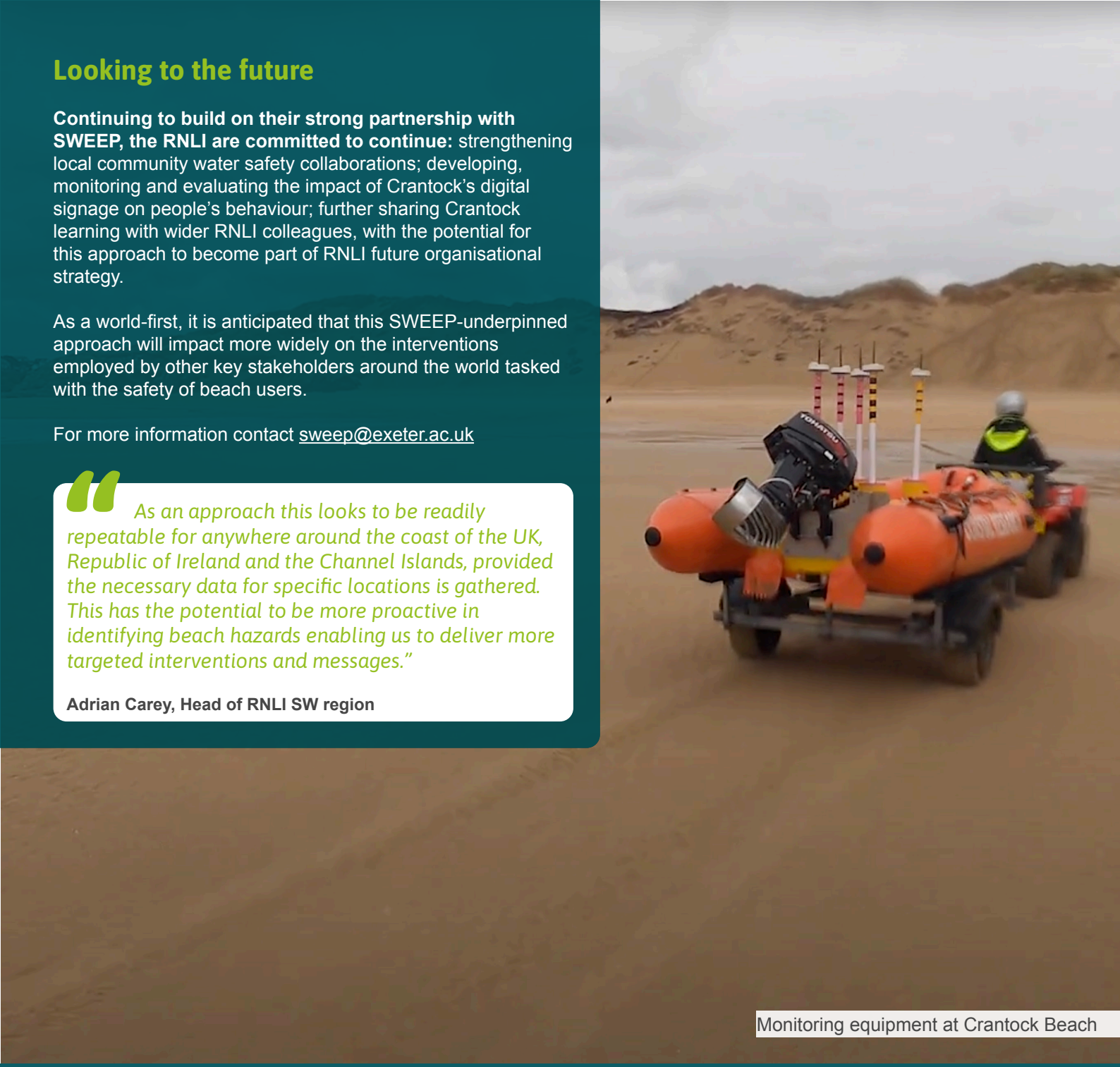
Looking to the future

Continuing to build on their strong partnership with SWEEP, the RNLI are committed to continue: strengthening local community water safety collaborations; developing, monitoring and evaluating the impact of Crantock's digital signage on people's behaviour; further sharing Crantock learning with wider RNLI colleagues, with the potential for this approach to become part of RNLI future organisational strategy.

As a world-first, it is anticipated that this SWEEP-underpinned approach will impact more widely on the interventions employed by other key stakeholders around the world tasked with the safety of beach users.

For more information contact sweep@exeter.ac.uk

> *"As an approach this looks to be readily repeatable for anywhere around the coast of the UK, Republic of Ireland and the Channel Islands, provided the necessary data for specific locations is gathered. This has the potential to be more proactive in identifying beach hazards enabling us to deliver more targeted interventions and messages."*
>
> **Adrian Carey, Head of RNLI SW region**



Monitoring equipment at Crantock Beach

Organisations we've worked with

Underpinning NERC Science

- NE/H004262/1 - Dynamics of Rip currents and Implications for Beach Safety (DRIBS)

About SWEEP

The South West Partnership for Environmental & Economical Prosperity (SWEEP) is a partnership between the University of Exeter, the University of Plymouth, and Plymouth Marine Laboratory. Funded by the Natural Environment Research Council and stakeholders together to solve key challenges faced by those working with our natural resources. **www.sweep.ac.uk**

Natural Environment Research Council