This newsletter kick-starts a series of issues that will follow our final year of delivery on the ‘Sullied Sediments’ project. In this issue, our Project Lead talks about the core values that underpin the project partnership and we offer you a general update on the project, a profile on our lead for Work Package 3 – Sediment Assessment, a round-up of the conferences, events and meetings where partners have been discussing the project and more. The next four issues will be published in September 2019, November 2019, February 2020 and April 2020. We hope you will continue to enjoy reading about our progress as we bring the project to a close.

Message from Our Project Lead – Professor Jeanette Rotchell, University of Hull

In this edition, I would like to talk about the importance of core values in the running of our project.

‘Sullied Sediments’ is a large project which I like to describe as ‘a machine with a lot of moving parts’. We are addressing three main objectives around sediment characterisation, treatment methods to remove Watch List chemicals and influencing citizens’ behaviour to reduce the amount of such chemicals released into the environment.

Our team includes colleagues from broad and varied backgrounds and we both literally and figuratively speak different languages. Despite such a complex partnership and diverse objectives, we function well as a project and I feel that this is down, in part, to having agreed, and now complying with, a set of core values from the start of our project.

Transparency and accountability have helped in that we become aware of any problems or issues quickly and can act as a partnership to resolve them and move ahead.

Awareness and respect for others may seem like unusual core values yet they have been key with work packages where we have multiple partners needing to co-ordinate their efforts on tight time-scales so that the resulting scientific investigations can be conducted. We have coordinated a seasonal sampling programme at nine sites, with large boxes of sediments jetting around the North Sea Region for multiple analyses by various partners without too many glitches. In adopting this co-ordinated, transnational approach, we are generating an excellent dataset that will have incredible breadth, depth and detail.

On occasion, the academics among us are carried away with interesting side avenues, but staying goal-oriented and focussed on our project milestones have prevented any serious distractions.

Finally, I think it is fair to say that when we come together as a partnership, while we do work hard towards our goals, we are all having some fun too. We know each other well, trust each other to deliver and that brings a certain kind of reassurance from my project management point of view.
**Project Overview**

We have made significant progress on a number of activities and deliverables, which moves us closer to achieving our objectives relating to the better assessment, better treatment and better prevention of chemical contamination in our waterways. Below is a summary of the core work packages:

**Work Package 3 Sediment Assessment (WP3-SA)**

We have completed our sampling rounds as planned. As a reminder, in each round, sediment samples are extracted from nine locations across the Elbe, Humber and Scheldt river catchments. The data that we are gathering is helping us to identify the levels and locations of the Watch List (WL) chemicals we are concerned with as well as Priority Substances (which have proven to be a risk to or via the aquatic environment). Collecting data on the latter helps with interpreting the data on the WL chemicals. All of the information is fed into a large database which we are sharing with water industry partners and using to produce a number of reports, including one on the pollutant pressures in our target waterways and another on the impact of these substances on the wider environment.

Also as part of WP3-SA, we are making progress on developing new methods for characterising the WL chemicals, diclofenac, triclosan and estradiol, which will be validated once completed.

**Work Package 4 Clean-up Pilot (WP4-CU)**

Extraction methods using the sporopollenin exine capsules (SpECs) for the same three WL chemicals above have been identified. A method has also been developed for phosphate. These methods are now being tested on mixed systems, including samples combining two analytes, spiked river water samples and synthetic sewage.

A protocol for studying the reduced bioavailability of WL chemicals when adsorbed (locked away) onto SpECs has been finalised and partners across the region are conducting the necessary experiments.

In addition, the end-of-waste assessment, which promotes an increase in the use of treated sediment, has been produced in draft and presented at several meetings this year.

**Work Package 5 Changing Citizens’ Behaviour (WP5-CB)**

The paper analytic device (PAD), or ‘dipstick’, is able to detect phosphate in water samples and we are working on a device that will detect triclosan to the required levels. To recap, the PADS are used by volunteers to take readings from samples collected from their local waterways. In order to capture the results from these samples, we have created a customised app, called RiverDip, which is easy to use and can be downloaded in English, Dutch and German from the Apple Store and Play Store. So far, sampling sessions have taken place in the Humber River catchment and these will continue. Over the course of the summer and autumn, we will be rolling out the volunteer programme out in the other catchment areas. In addition to this, the PADS and app were tested on agricultural surface waters by colleagues working on the NuReDrain project.
Profile on Work Package 3 Lead

Professor Susanne Heise, Hamburg University of Applied Sciences

Susanne is Professor at the Hamburg University of Applied Sciences and leads the work group on applied aquatic toxicology (www.aat-haw.de), which currently consists of three PhD students and a number of undergraduate and graduate students. Susanne has been working with sediments since her PhD in biological oceanography. In recent years, she has become more involved in fresh and brackish water systems but continues to work with “mud”. Since 2002, she has been an active member of the European Sediment Network “SedNet” (www.sednet.org).

Susanne’s research topics range from investigations into aquatic ecotoxicity of emerging contaminants (e.g. nanomaterials, rare earth elements, personal care products) to applied work such as environmental assessment studies along rivers and in river basins. With regard to sediments, Susanne is especially interested in the question of how to interpret responses of biotest batteries and how to use ecotoxicological data to classify contaminated sediments for sediment management.

Beside lecturing, theoretical and lab work, she loves to go out and collect sediments herself, by foot, by boat or while diving.

Taking the Project to New Audiences

Over the past few months, our partners have been busy promoting the project and talking about their research at a variety of meetings and events. Below is a round-up of their activities:

In September 2018, the University of Hull team took part in the British Science Festival and Hull Science Festival (UK). Both events provided the opportunity to showcase the work of our PhD students and help people better understand how certain WL chemicals are released into the water system through our everyday activities and how they can reduce their impact on the environment. At the British Science Festival, we talked to over 120 people and, over the course of the two-day Hull Science Festival, we engaged with over 770 children and adults.

In the same month, Susanne Heise from the Hamburg University of Applied Sciences (HAW) and Goedele Vanacker from OVAM partnered with SedNet to organise a workshop on sediment classification and management decisions – in situ and ex situ. The workshop took place in Hamburg, Germany, and followed our second annual meeting, which enabled us to bring our partners together with SedNet colleagues. A report on the workshop proceedings will be published shortly.

In April 2019, our project was represented at the 11th International SedNet Conference in Dubrovnik, whose theme was ‘Sediment as a dynamic natural resource – from catchment to open sea’. Goedele from OVAM chaired a session on the circular economy and sediment as a resource and Susanne from HAW led a session on sediment quality guidance and assessment. OVAM’s draft
study on sediment remediation techniques was also shared at this event as well as at the AquaConSoil Conference in Antwerp in May.

Also in May and also in Antwerp, OVAM hosted an international workshop focused on the system analysis of sediment. This event was co-organised with the SedNet working group, ‘Sediment in a Circular Economy’. The event built on information gathered during a previous workshop in Flanders and on the results of the second meeting of the SedNet working group, which took place during the SedNet annual meeting in Dubrovnik.

At the end of May, Sebastian Hoess from Ecossa and Susanne Heise and Sonja Faetsch from the Hamburg University of Applied Sciences attended the 29th annual meeting of the Society of Environmental Toxicology and Chemistry (SETAC) Europe in Helsinki. The theme of this year’s conference was ‘One Environment * One Health * Sustainable Societies’. This major event is considered essential for anyone interested in emerging research, regulatory developments and the latest methodologies in environmental toxicology and chemistry. ‘Sullied Sediments’ was given a strong showing with three posters presented by Susanne, Sonja and Sebastian. If you would like to read their posters, please visit our blog: https://sulliedsediments.wordpress.com/

At the North Sea Region Conference 2019 in Marstrand, Sweden in June, Stevie Swenne from VMM (Belgium) and Chris Barnett from the Canal and River Trust (UK) represented our project and were armed with leaflets to share amongst the delegates.

In July, PhD candidate Aimilia Meichanetzoglou presented a poster at the 14th International Conference on Materials Chemistry (MC14) in Birmingham, UK, and in August we are delighted to announce that she will be giving a paper at the American Chemical Society National Meeting in San Diego, US. For more on Aimilia's travels, see her post on our blog (link above).

Interreg Recognition of Our Green Credentials

To mark this year’s EU Green Week in May and highlight the importance of transnational working, the Interreg programmes published ‘Working for a Greener Europe’. This special publication features a selection of Interreg-funded projects that are putting EU environmental laws and policies into practice. The selected projects are working cooperatively across Europe to improve water and air quality, better protect our natural environment and promote recycling and waste management as well as other key priorities.

The ‘Sullied Sediments project’ was honoured to be selected for inclusion on page 24 of this publication.

New Resource Available

Since March, volunteers in the Humber catchment have been carrying out water sampling using the PADs and app as part of Work Package 5 – Citizens Behaviour. Now that we have results to share, we have launched an open source online map which shows where the samples have been taken and what the results of the volunteers’ phosphate tests are. These records are the first of many that we hope will be sent to us by volunteers working in all three river catchments. A link to the map and some guidance for interpreting it are available on our web space:

https://northsearegion.eu/sullied-sediments/tools-and-resources/

We are pleased to see how our volunteer network is continuing to grow. The Canal and River Trust’s Towpath Taskforce volunteers were our pioneers, helping us to test the usability and effectiveness of the PADs on a cold day in December. They have been continuing to take samples over the spring and summer.

We have also been rolling out the training and sampling activity to other groups, including the Pocklington Canal Amenity Society, the Yorkshire Wildlife Trust’s Tomorrow’s Natural Leaders and Yorkshire Derwent Catchment Partnership, and have plans to work with groups beyond the Humber catchment in the autumn.

If you are interested in finding out more about this volunteer sampling programme or getting involved to help us test more waterways, please contact Annabel Hanson, Sullied Sediments Project Coordinator, at annabel.hanson@eastriding.gov.uk.

Our Sullied Sediments Partnership

The project partnership includes public, private and voluntary sector organisations from across the North Sea Region. It is made up of our project beneficiaries, who are responsible for delivering the project, and our advisory partners (in italics), who provide their expertise and knowledge to assist the partnership:

**Belgium**
- OVAM
- University of Antwerp
- VMM

**Germany**
- ECOSSA
- Elbe Habitat Foundation
- German Federal Institute of Hydrology
- Hamburg Ministry for the Environment and Energy
- Hamburg Port Authority
- Hamburg University of Applied Sciences
- Institut Dr Nowak

**The Netherlands**
- Foundation for Applied Water Research (STOWA)
- Radboud University

**UK**
- Canal and River Trust
- East Riding of Yorkshire Council
- East and North Yorkshire Waterways Partnership
- Environment Agency
- Northumbrian Water
- Socotec UK
- Thames Water
- University of Hull (Project Lead)
- University of Leeds
- Yorkshire Water

**Pan-European**
- Sediment European Network Steering Group (SedNet)