

PACCo



Promoting Adaptation
to Changing Coasts

Promouvoir l'Adaptation
aux Changements Côtiers

Interreg



France (Channel
Manche) England

European Regional Development Fund



SPRING 2023

PACCO NEWSLETTER

Welcome...

...to the latest updates and last newsletter of project PACCo

Welcome to the last PACCo newsletter! March 2023 marks the end of the project with the exception of the new tourist facility at Quiberville and the work to reconnect the Otter Valley to the sea, which has been extended by three months until June 2023. This fourth and final issue celebrates the achievements of the PACCo project, and shares the latest progress at our two sites - the Lower Otter Valley in Devon, England and the Lower Saâne Valley in Normandy, France.

In this issue: we provide a sneak peek into the PACCo Guide (the practical lessons learnt and recommendations from the project intended to assist other existing or potential coastal climate change adaptation and/or managed realignment projects), plus insights from our final PACCo Coastal Conference. We also present reflections and views from some of our partners (as well as an artist's impression in the case of the Otter Valley) on moving towards the end of the PACCo project and what will come next for our two sites.

While PACCo may be drawing to a close, the most exciting part of our environmental restoration work is yet to come! The Otter and Saâne's transforming landscapes will continue to develop and thrive over the coming years, while the PACCo initiative and model will leave a lasting legacy for coastal communities far into the future.



Saâne Valley, Thomas Drouet, Cdl



Otter Valley, KOR Communications

Introduction to the PACCo Guide

Lessons learnt and recommendations on coastal adaptation to climate change

The Promoting Adaptation to Changing Coasts (PACCo) project has involved delivering a wide range of different activities which formed part of the climate change adaptation strategies for both the Lower Otter Valley (East Devon, England) and the Saône Valley (Normandy, France).

The aim of PACCo is to implement climate change adaptation solutions in estuarine areas, and demonstrate these transferrable solutions through its two pilot sites. The project included:

- Communicating about climate change and raising awareness
- Protecting and restoring lost intertidal habitats
- Relocating businesses and amenities to areas at lower risk of flooding
- Developing resilient design for new infrastructure

PACCo funded a blend of research-based activities and construction work, which are summarised in the guide.

Structure of the guide

The guide is structured in six parts (see diagram below). Each part provides an overview of the approach taken in both estuaries, sharing what we did, and the outcomes of our actions, including any lessons learnt or future recommendations.

Top tips

The project's lessons learnt have been summarised into the following recommendations:



PACCo Conference, Feb 2023 (Lydia Burgess-Gamble and Régis Leymarie)

- Identify suitable funders, landowners and partners at an early stage
- Understand your funders', landowners' and partners' requirements
- Know your site's history to shape its future design
- Take a natural capital approach during evaluation to articulate options and benefits
- Nurture your partnership as it is the foundation for project success
- Bring your community with you through effective engagement
- Communicate consistently using a wide range of approaches
- Use the project as an opportunity to engage the next generation
- Conduct a detailed site wide ground investigation
- Show foresight and accommodate future engineering projects



Diagram showing the structure of the PACCo Guide, Environment Agency



Fish monitoring in the Lower Otter Valley

Top tips continued:

- Be vigilant to continually changing climatic and ground conditions during construction
- Maintain and improve visitor infrastructure during and post-construction
- Anticipate problems and resolve them collectively
- Make monitoring central and ensure you have a budget for it
- Think about the project's legacy when developing signage and infrastructure

Next steps

The guide will be publicly available for free and published at the end of March 2023 on the PACCo website (Promoting Adaptation to Changing Coasts - www.pacco-interreg.com), both in a summary and full version.



The PACCo Hub, Lower Otter, EDPHCT

The guide provides a detailed reference point for a technical audience of consultants, non-governmental organisations, contractors, academics and communications and engagement specialists in the environment sector. In addition, the language and readability has purposely been designed to engage those of a non-technical audience who are interested in the subject matter.

We believe that this report is the first of its kind – providing a complete overview from conception to completion of what climate change adaptation entails.

By sharing the specific details on how PACCo was delivered, we hope that the lessons we have learnt can be used across many other estuaries. In turn, we hope future projects continue to build on our model, adding to the evidence base, and further encouraging and inspiring coastal adaptation.



Opening of the summer exhibition in Sainte-Marguerite-sur-Mer in July 2021, L'Agence Nature/Cdl

PACCo final conference reflections

by Régis Leymarie, Conservatoire du littoral

The final conference of the Interreg PACCo project on 7-9 February 2023, was a great moment of exchange and sharing between the different partners of the project. This conference showed the adaptation challenges of coastal communities, and that the challenge is also global with the melting of the ice cap, and can be seen in all the oceans and shores of the world. The solutions are local and regional, within the framework of the public policies of each region.

The Environment Agency designed the programme with a high level of scientific rigour, with interventions from experts on the issue of ocean warming and its consequences on a national or local scale with the examples of the Otter, the Saône and the Portsmouth waterfront. It is this diversity of testimonies and approaches that facilitated a shared awareness.

The organisation of the conference, with short sequences and regular exchanges ensured the audience was not passive, and that they participated in the event and felt engaged.



Basse Saône stall at the conference

This is rather unusual in France, as we tend to take a more formal academic approach with less audience participation.

Another key element of the event's success was the model of having participant exchanges broken up by sufficiently long opportunities to visit the exhibition and learn about projects via banners and videos, meet project teams, reinforce and consolidate approaches, and plan future collaborations.



Presentation by Régis Leymarie, Cdl



Presentation by Camille Simon, Cdl

PACCo final conference reflections by Carolyn Petersen, EDPHCT

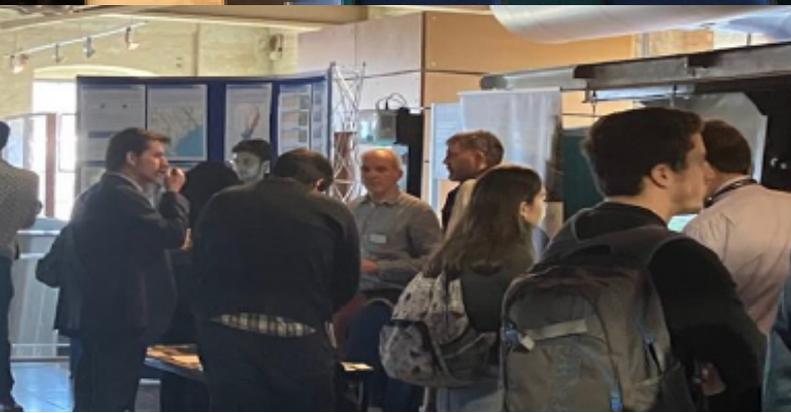
We arrived in sunny Portsmouth on Monday 6 February in time to set up our PACCo stall. The conference venue, the Action Stations, was in the historic area of the city and was a huge, mainly open-plan building normally used as a hands-on interactive Royal Navy Commando experience, with a large auditorium, conference room and café area.

With leg- and team-work carting kit up the stairs, installing our drone video footage, and improvisation – including, moving things around and attaching dozens of sticky velcro labels, we managed to set up our PACCo project stall (which included illustrations by local Devon artist, John Washington).

From the start on the Tuesday morning there was a definite buzz around the exhibition area, with participants exploring the stalls, greeting old friends and colleagues and asking questions about the various projects being exhibited.

The conference was organised jointly by the PACCo project and Coastal Practitioners, a consortium of experts in climate change and coastal flood resilience, management and flood defence, including representatives from the Environment Agency, Natural England, local authorities, non-governmental organisations and local community groups.

A number of UK and EU projects were represented and it felt like a community of practice – people who had similar interests and were interested in learning from each other. The likeminded PACCo and Coastal Practitioners delegates complemented each other, and the mix of policy and strategy with practical on-the-ground knowledge created valuable opportunities for rich discussions.



The presentations were varied and covered a range of topics from overview, policy and strategy; through a detailed look at climate and coastal environmental data; to local projects and engaging with local communities. We had presentations showcasing nature-based solutions, managed realignment, flood resilience and defence, and catchment and climate change projects from all over the UK as well as from PACCo partner organisations in the Saône Valley, Normandy, France.

We learned about historical and recent flooding events, and were given a powerful insight into what the future might look like in terms of sea level rise under different climate scenarios. There was a chance to discuss important issues, such as how we can adapt and respond to climate change and sea level rise, what data is available to support this, and innovative solutions that have already been trialled and implemented. There was a call to action, a willingness to experiment and try new things, and a discussion of potential funding sources in the context of the loss of EU funding (for the UK).

The discussion on community engagement also provided some interesting insights into how best to engage with local people in relation to coastal / flood resilience schemes – ensuring inclusivity and representation, engaging early and in an open way, and facilitating the process of taking a step back from potentially entrenched ‘red lines’, problems and tensions in order to examine the dilemmas, issues and values driving these. Such an approach can potentially lead to the creation of more innovative, inclusive solutions.

Personally, I gained insights into the breadth of work being done in this area, the policy context and data available, and how the PACCo project is situated in the wider context of coastal / flood resilience, nature-based solutions and climate change work.

The conference also brought the opportunity to meet a range of people working in the field, as well as to connect in person with some new and old friends. It was a great way to reinforce and (almost) round off my relatively short but rewarding experience of working on PACCo.

A huge thank you to the PACCo and Coastal Practitioners teams for organising the conference (including the delicious vegetarian and vegan food). Thanks also to Marion and Sinead for the English-French language interpretation (including cheerfully coping with the different styles, accents, acronyms and speeds of presentations).

The full PACCo Coastal Conference report, including links to presentation slides and individual reports, is available on the PACCo website downloads page.



PACCo team and partners at the Action Stations in Portsmouth

Final words from the French PACCo team



Reflecting on the end of PACCo by Amélie Boutillier, Deputy General Manager of Engineering, Terroir de Caux

Here we are, three years after the start of the PACCo project. And with only a few days to go before the end of operations, it is time to look back at the work carried out and accomplished during this period.

From the outset, this initiative has been a real time trial for our community, as well as for our service providers: the project manager, the builders, and all the people who have worked closely or remotely on this project.

The wastewater purification site is now in operation, and the first results collected to verify its functioning show it is working efficiently. Our mission does not stop here, however – important connection tasks in the private domain (connecting each private house to the new sewerage network) are currently being carried out in order to finish the clean up of this lower valley area as quickly as possible. In addition, there will be positive effects on the environment, but these will be progressive and develop over time.



Reflecting on the end of PACCo by Régis Leymarie, Deputy Delegate Normandy, Conservatoire du littoral

PACCo has been a series of challenges, both in its writing (during the Brexit negotiation phase), in the submission of the application, and in the implementation phase, which began during the first COVID-19 lockdown.

Despite all the obstacles and questions, PACCo has been a formidable accelerator of the implementation of coastal climate adaptation projects that were envisaged on both sides of the Channel.

The two projects in the PACCo scheme demonstrate that areas that make a commitment to coastal climate adaptation and collaboration can find solutions within their own framework of local consultation and national public policies, in this case thanks to the financial support of the European Union.

Final words from the English PACCo team by Sam Bridgewater, EDPHCT

This newsletter will be published before the Otter flood embankment is breached. At the time of writing, attention focuses on the building of a 70m footbridge that will span the breach and ensure continuity of part of the South West Coast Path.

After two years, the local community and visitors may be tiring of the disruption of what has been landscape-scale change not seen in East Devon for centuries. But the end is now within sight and even during this time of maximum disruption there is excitement in the air of the benefits to come and an early promise of an uplift in wildlife: the biggest flock of European white-fronted geese to be seen in Devon for decades; hundreds of snipe occupying the nascent creek network of the grazing marshes; numbers of black-tailed godwit ten times greater than have been witnessed for a generation.

Already, thousands of people are walking the new raised and improved footpaths on the west of the valley. For some who experience mobility issues, this new infrastructure has provided the first accessible means to enjoy the area. The new raised road across the floodplain is now open and the community and businesses of South Farm can move around untroubled by regular flooding.

Three months from now, teams from Budleigh Salterton Cricket Club will play their first matches on their new ground looking out over a tidal valley. Five years from now, once the habitats have developed, we hope the site will be internationally recognized as a conservation area supporting many species of rare wading bird.



Dr Sam Bridgewater, Head of Wildlife and Conservation at East Devon Pebblebed Heaths Conservation Trust

For several centuries the Otter Estuary has been the constrained and heavily modified supporting act lying between the Axe and Exe estuaries.



*Redshank, Otter Estuary,
Matt Maran*

Often overlooked by naturalists, it has only shown glimpses of its former wildlife glory. Its invertebrate, fish and bird life were once magnificent before the valley was drained. Now they will be again.

Adaptation to climate change can be difficult – both the acceptance and the ‘doing’ of it. As quoted at the conference, according to the pioneering aviator Amelia Earhart, the most difficult thing is the decision to act, the rest is merely tenacity. Reflecting back over the last ten years of climate adaptation, this sentiment seems apt. But I sincerely believe that addressing problems, issues and concerns head-on can bring multiple benefits for society and the environment. I hope that the Lower Otter Valley will become a model for adaptation and environmental enhancement that can inspire others to carry out similar work elsewhere.

Thank you to the Interreg France (Channel) England Programme for supporting and part-funding the initiative, along with the Environment Agency, and making the vision for the two sites a reality. Thank you also to the many colleagues (now friends), who over a period of ten years have collectively developed and delivered the scheme, and to those from the community who have engaged with the process to make the project the best it could be.



Sam presenting an overview of PACC0 at the East Devon AONB Annual Meeting, Spet, 2022

Final words from the English PACCo team by Mike Williams, Environment Agency

As we approach the end of the PACCo project and, at the same time, also get closer to completing the construction projects in England and France, it is time to reflect on how much has been achieved. Looking back and realising that it is nearly 10 years since we began work on PACCo reveals how much preparatory work goes unseen by those who will benefit from the project in the future.

It has not always been a smooth ride and at times has been extremely challenging. Just getting PACCo across the line and agreed as part of the France Channel England (FCE) programme required a huge amount of work by what was then a very small team. However, we were enthused by the idea of working together to demonstrate that what we were doing was a good thing that others could learn from.

PACCo played a vital part in enabling the Lower Otter Restoration Project (LORP) and Basse Saône projects to get up and running. It is quite possible that without the additional funding from the European Regional Development Fund these important demonstration projects might have faltered and would certainly have been further delayed.

From an English perspective, the relationship between PACCo and LORP has been quite complex. With the two projects interdependent yet separate, and with two different but overlapping project delivery teams, we have had to find a delicate balance to achieve mutual support and, at the same time, avoid tensions. In France too, delivery of the physical works in the Saône valley has gone hand in hand with the actions to carry out the studies and reports needed for PACCo.



Mike Williams, Habitat and Restoration Specialist

We have, I think, achieved this successfully, even though we have undergone several changes of personnel, particularly in the various teams working on PACCo, with the inevitable pauses in delivery that such changes mean; such pauses are even more tricky when set against the background of a very fixed end date.

Congratulations must go to the teams on both sides of the Channel for their efforts to ensure that PACCo will be completed on time and in compliance with the many detailed requirements of the programme. Our thanks also go to the many people in the FCE team with whom we have worked over the whole period from development to completion; it really has been a team effort.

Communications and engagement have been a big part of PACCo, with all of us working hard to ensure that we enabled everyone, French and English alike, to take part and learn from our shared experiences. This has been massively improved by having members of the team with fantastic language skills.

And so, we approach the end of PACCo, and of the FCE programme itself. It's the last chapter of a long running story which may not be repeated in the future. However, our projects are, in some ways, still a work in progress; much of the work is complete but there are still some significant pieces of work to do on both sides of the Channel and lots of details to be finalised.

There is also a strange mixture of emotions because, although the construction phases are close to being finished, in some ways they are only the beginning, because the period of evolution that will follow will be perhaps even more interesting and exciting.

Monitoring the changes in the two valleys and seeing how the lessons we have learned and shared with others are used will be fascinating; I'm sure that many of us who have helped to create these great pieces of work will continue to look on with keen interest even if we are no longer directly involved.

Thanks go to everyone who has helped in any way; you can be proud of what we have achieved together!



Drone footage, Otter Estuary, March 2023, KOR Communications



Mike leading a recent tour at the Lower Otter Restoration Project site



Mike presenting at the Interreg VA France (Channel) England conference



Drone footage, Otter Estuary, March 2023, KOR Communications



A day in the life of a graduate engineer at PACCo by Ed McIntyre, Environment Agency

Ed is a graduate engineer who joined the Environment Agency's graduate programme in 2021. He obtained a first-class honours degree in Civil Engineering from Newcastle University, and previously worked for Natural England.

On the graduate programme, Ed completes a variety of rotations and secondments to sign off attributes on the way to achieving chartership status with the Institution of Civil Engineers. His previous rotation was in Flood Risk Activity Permitting, before moving into the Promoting Adaptation to Changing Coasts (PACCo) project team in the summer of 2022.

Ed's role is incredibly varied. He has partaken and hosted site visits, interviewed for promotional videos, presented in cross-border webinars, and facilitated and spoken at conferences. Travelling with the team to northern France remains one of his personal highlights, giving him the opportunity to build rapport and strengthen relationships.



Thomas, Camille, Régis, Becky, Sophie, Ed and Lydia in Quiberville, Normandy



Ed on the Lower Otter construction site, EA

Working alongside senior project manager, Dr Lydia Burgess-Gamble, Ed has mainly worked on formulating and producing the PACCo Guide. A major legacy report that captures all the work on both sides of the channel. The outputs were a series of lessons learnt and recommendations for future projects. He devised and wrote the 'Design and Construction' chapter, which entailed close liaison with consultants, contractors and the project board, as well as analysis of engineering documents to gather the relevant information.

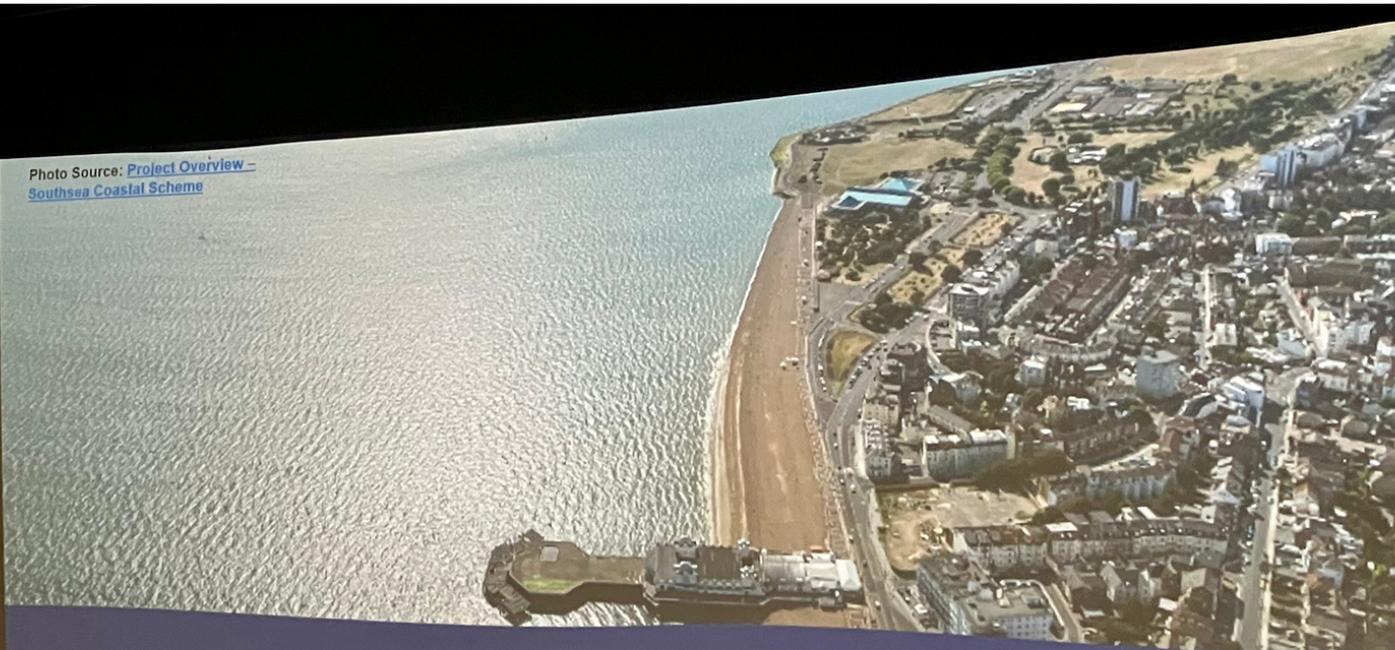
Reflecting on his experience to date, he commented: "It has been a genuine privilege to have been involved in the PACCo project. I have always believed in cross-border collaboration to adapt to the growing risk of climate change, and being part of a diverse and committed team to share best practise and knowledge with is immensely rewarding.

"I am very proud of what the team and I have achieved. The physical changes to the landscape are the most noticeable, but the way in which it has been delivered is unique. Though much of the work is applying well established engineering practises, the exposed environment, variable ground conditions and scale demand a degree of pragmatism. Furthermore, working together with the local community and environment sets a baseline for future projects to follow.

"Personally, publishing the guide and knowing it will provide a source of encouragement and comfort for others to take on the challenge of costal adaptation is very fulfilling. It has broadened my engineering knowledge greatly and I am eager to apply what I've learnt in my career moving forward.

"Above all else it has been so much fun. Travelling overseas to France, which I have been reminded many times is not common with work, has continually engaged me and been a source of great enjoyment. I have made countless professional and personal connections that will last way beyond project completion."

Photo Source: [Project Overview – Southsea Coastal Scheme](#)



Southsea Coastal Scheme – Site Visit Logistics

Date: Thurs 9th Feb
Ed McIntyre, Graduate Engineer,
Promoting Adaptation to Changing
Coasts (PACCo) Project Team



Ed presenting at the PACCo Conference, February 2023

First professional project experience by Thomas Drouet, Conservatoire du littoral

Following my master's degree in geography and regional planning at the University of Caen, I joined the PACCo team as Project Manager, with the task of developing and writing the various deliverables. When I arrived, the project had already entered its operational phase.

The PACCo project is a great opportunity for me to work on a cross-border climate change adaptation project that is unique. The project is the first of its kind to be demonstrated in two different countries at once.

Working on an innovative project on this scale allows me to look in-depth at a wide range of subjects, from biodiversity to socio-economic issues, but also to be able to interact with all the partners and stakeholders in the territory, and with our English partners.

This cross-disciplinary approach has enabled me to acquire new skills and, in particular, to discover the other side of project management, the complexity of its implementation, the coordination of all the partners and the management of the various risks. However, there is nothing more gratifying than to see the various operations come to fruition and to see what was only on the drawing board a few months ago actually take shape.

Today, I understand how lucky I am to be working on such a large-scale, flagship project, especially when I see the requests to come and visit the valley from elected officials and technicians from coastal towns all over France, and hear that the PACCo project and the Basse Saône 2050 territorial project are models that are inspiring other territories.



Case study: capping the historical landfill in the Lower Otter Valley

by Ben Fouqué, Environment Agency

The Lower Otter Restoration Project (LORP) site has been studied over several years by our project team. It is therefore no surprise that development and historical human threats have been found within a floodplain that has been heavily altered over the last 200 years by man-made modifications.

One of these identified threats is a known historical disused landfill located along South Farm Road, in the middle of the floodplain. This is not unusual as many disused landfill sites are located within or near coastal areas and pre-date environmental and waste management regulations. These are now at risk due to climate change and erosion.

In the Lower Otter, the landfill was implemented in 1928, and has been extended over the years. It was closed in 1978. Whilst its content is not well documented, Clinton Devon Estates have records on its development and its uses over the years. Whilst some of the archives describe the detritus, the type of waste buried is not known for certain and waste management during this period was not fully understood. The tip was also at risk of fluvial flood and its consequences (erosion, potential release of contaminants) during and after its closure.



Construction works at the tip site, Environment Agency

The project team had different options on how to secure the landfill, dependent on whether a full-scale restoration or a more localised restoration of the floodplain was chosen.

As the scope of the Lower Otter Restoration Project was defined and the type of restoration of Big and Little Marsh was selected, it determined that the landfill needed to be partially removed to allow the reconnection of North Big Marsh and South Big Marsh.

Ground investigations were commissioned to understand the content of the landfill, which would inform the design and allow the mitigation of any risks related to the landfill. A small section of the landfill was removed to allow the construction of a bridge and secure South Farm Road; the rest of the historical landfill area was capped to ensure better protection. This design choice also enhances the landfill, using it as an area for the public to walk and observe the wildlife of the valley.



The design opted for also meant that fewer risks needed to be mitigated during construction. However, safe methods of work were still needed and implemented to avoid disrupting the content of the landfill.

More importantly, studies were undertaken to understand the impact of tidal inundation and climate change on the landfill. Results showed that the landfill was adequately protected after the project implementation, and that the work not only allows protection against tidal inundation, but also against fluvial floods, which was not the case before the project.



The tip area as it looks now with newly planted trees, March 2023, EDPHCT



Ben presenting on LORP at the Basse Saône final conference in Rouen, March 2023

The PACCo project and the Lower Otter Restoration Project are not only securing the disused landfill, but are also demonstrating to stakeholders the possibility and options to remedy such a problem. I think disused landfills can also serve as a message and legacy to the future generation of how we can adapt our approaches to be better for both people and the environment.

Ben is a graduate engineer working on the PACCo project as part of the Environment Agency. His full case study on the landfill is available on the PACCo website and describes and details the history of the Lower Otter landfill; the engagement around it; the different methods considered to mitigate it and protect the surrounding environment, and how the location of the tip was decided through the different steps of the project from planning and construction, to its ongoing maintenance.

The old landfill is now safeguarded and the work carried out there will allow the landscape to be reclaimed by nature, returning it to a more natural state.

The Saône Valley survey

A survey of residents and visitors shows the area will become even more attractive thanks to the Basse Saône 2050 project

"The valley is quiet, rejuvenating and I feel good here" - 96% of those questioned agreed with this statement. The logical consequence of this is that the same proportion of the population says: "I will certainly come back here".

These are the most striking figures from the study carried out in Longueuil, Quiberville and Sainte-Marguerite by Alex Nogueira, who was commissioned by the Conservatoire du littoral. You may have come across him during the summer, or you may have been the recipient of the questionnaires he widely distributed on paper and online, or the questions he asked face-to-face.

In total, 347 completed questionnaires were analysed, with a good gender distribution: 52% women, 48% men.



The Saône Valley, Thomas Drouet, Cdl



Wall newspaper, Saône Valley, Cdl

The first lesson is that one feels good in the Lower Saône Valley, and the words that come up most often to describe it ("calm"... "landscapes"... "habit"... "conviviality"... "tranquillity") bear witness to this.

But we could do even better! When asked "What do you dislike about the Saône Valley?" Residents also mentioned a lack of cleanliness, the danger of traffic when visitors come in summer, the artificialisation of the Quiberville waterfront, and the inconvenience of hunting and wildfowling.

And then there is the question of the number of visitors during the summer period: logically, it is more clearly perceived by the residents of the seafront than by those of the hinterland, and by the inhabitants of Quiberville and Sainte-Marguerite than by those of Longueuil.

Residents (more so than occasional visitors) are aware that this peace and quiet and gentle way of life could be threatened by the effects of climate change, and in particular by the evolution of the coastline and by episodes of marine submersion and river flooding, the frequency of which is increasing. 53.6% of users say they have a good knowledge of the causes, issues and effects of climate change. The 15 respondents who said they had little knowledge were secondary residents, who had been in the lower valley for less than three years.

In this context, 96% of the residents questioned stated that they were informed about the Basse Saône 2050 project, which aims to adapt the territory to new climatic conditions. Above all, 81% of them approve of this project (50.8% "completely agree", 30.6% "agree").

This broad support for the project is encouraging but does not erase certain reservations or concerns, particularly for users of the Quiberville municipal campsite, whose relocation disrupts their usual routine and sense of belonging to the valley.

However, this is not enough to cancel out the expected benefits of the project, which will safeguard biodiversity, and provide a model of ecological restoration for the whole of France, as well as benefits for the local economy.

In short, the future Lower Saône Valley will be even more attractive than it already is!

Diagrams showing results of two survey questions. Source: Cdl.

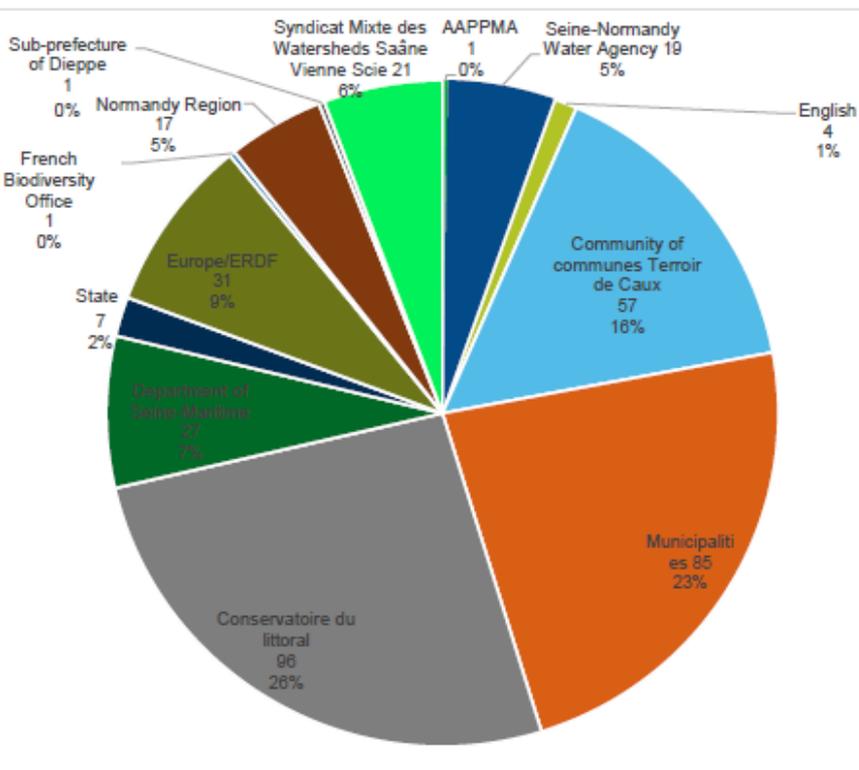
Pie diagram - response to Q: Do you know who is managing this project and who the main partners are?

Source: Cdl.

Translation of word cloud (top to bottom & left to right):

Cliffs, Wildlife, Clean, Fishing, Beautiful, Quiet, Hiking, Natural Landscapes, Sea, Beach, Restful, River, Stroll.

Source: Cdl.



Basse Saône 2050: where do we go from here?

The territorial project is shaping the future of the Lower Valley.

What will the Lower Saône Valley look like in 2050? This question emerged in the 2000s, when storms, river and coastal flooding became more frequent and severe. It then became clear that the effects of climate change would not spare the area and that sea level rise would destroy any confidence in feeling safe behind the dyke erected in 1914 "to protect [the valley] from being inundated by spring tides and to rid it of the feverish miasmas that have too often been the cause of epidemics."

Even if the dyke has valiantly fulfilled its mission for a hundred year, its limitations and side effects are becoming problematic. For example, when increasingly frequent rainfall upstream causes the Saône River to swell and burst its banks, the dyke prevents fast drainage of the water into the sea.



Sketch of the Saône valley, l'île workshop, 2020, Cdl

The lower valley then acts like a bathtub with too narrow a plughole - impossible to drain.

Should we turn back the clock and remove the dyke? The idea has been considered, but the area is no longer what it was in 1864, when the first culvert was laid. Amenities have been built behind the dyke such as the departmental road, the Quiberville municipal campsite, houses and economic activities.

Gradually, decisions have been made. The Lower Saône Valley chose to take advantage of the inevitable adaptations needed to re-shape its future, its economic development and its living environment.

The local stakeholders (state, region, department, intercommunalities, municipalities, associations, local residents, farmers, fishermen, hunters, water agency, etc.) engaged in a phase of intense consultation that led to the design of the Lower Saône 2050 territorial project, and whose coordination was entrusted to the Conservatoire du littoral.

The project has three objectives:

- To manage the river flooding risk by re-connecting the Saône to the sea and at the same time responding to the risk of coastal flooding
- To improve the quality of the environment and restore biodiversity
- To take into account all the socio-economic uses of the lower valley (residents, users, farmers, fishermen, hunters, tourists, etc.)

To achieve this, several project strands had to be launched. To limit the risk of flooding, the Saâne must be reconnected to the sea, while preserving the dyke and the coastal road. This will be achieved through a rigid-frame bridge. The river must also be given space to overflow when in spate, but its floodplain is already partly occupied by... the Quiberville campsite. Prone to both river and coastal flooding, the campsite was at a constant risk of being closed down by the Prefecture, and so it had to be moved.

Today, the land on which the future tourist facilities will be built has been serviced and construction work is almost complete.



Sainte-Marguerite Seafront in Quiberville, Thomas Drouet / Cdl

In order to improve the quality of the water discharged into the sea, the ecological and sanitary condition of the Saâne must also be boosted. This means improving the quality of the water discharged into it. This will be ensured by the wastewater treatment plant in Longueil, whose construction is close to completion.

When completed, all of this work will mean that the Saâne will return to its historic floodplain in which to meander before flowing into the Channel under its brand new rigid-frame bridge. Of course, all this must be financed, and the Lower Saâne 2050 project has been able to benefit from EU funding through the cross-border PACCo (Promoting Adaptation to Changing Coasts) project between the Lower Saâne Valley and, on the English side, the Lower Otter Valley. The Lower Saâne Valley will be given a new look that will also enable the newly laid-out area to meet the challenges of the 21st century.

The end of the PACCo project does not mean the end of the Basse Saâne 2050 project - the modification of the river bed of the Saâne and its reconnection to the sea are still to be carried out. To do this, studies are underway to define the course of the watercourse, the slope of the banks and the technical characteristics of the bridge that will serve as an outlet to the sea. The reconnection of the water features (ponds, oxbows, ditches) will also be a determining factor for the surface area of the aquatic and brackish water wetlands recreated.

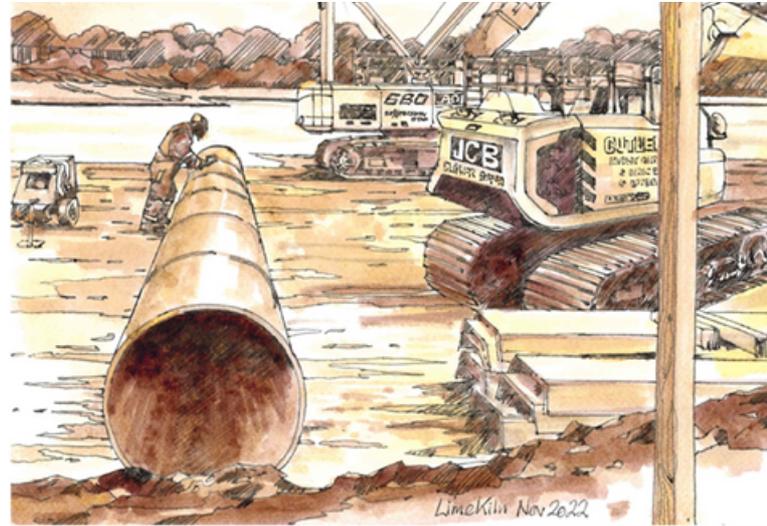
Monitoring of the habitats, species, surface and groundwater will make it possible to validate the nature restoration objectives set, and to adjust the management measures envisaged as needed.

Illustrating the changes on the Lower Otter by John Washington, Budleigh Salterton artist

Knowing that a major restoration project was due to begin in early 2021, it seemed like an ideal opportunity to plan a visual diary. The idea was to record the existing landscape and observe the changes as they occurred over months of preparation, the work itself right through to completion, and the eventual changes to the lower River Otter valley and estuary.

Rather than a simple photographic exercise, I wanted to reflect the varied changes to the landscape in a more subjective way through a series of line and wash sketches, often created on site to capture the context and atmosphere of the area.

To achieve the necessary coast and river protection, some unpopular and drastic decisions had to be made – felling long standing trees, closing and re-routing existing footpaths, piling for foundations of the new South Farm Road and construction of a bridge to enable flood water to pass harmlessly across the flood plain. All of these works were of course likely to be exposed to flooding issues throughout the duration of the project.



All illustrations © John Washington

Much of this activity has been covered by the drawings and will form a permanent record with around a hundred in the series spread over the length of the project.

As the work draws to a conclusion, I intend to keep the series updated as new hedging, shrubs and grasses take root, 24,000 newly planted trees start to grow, and a variety of birds and other wildlife regenerate the area.

For their help and support, I would like to thank the following: Kier, the Environment Agency, Clinton Devon Estates, East Devon Pebblebed Heaths Conservation Trust, and Fairlynch Museum.





Avocet



Viewing platform, Otter valley, EDPHCT

For more information and resources, visit the Promoting Adaptation to Changing Coasts sites

www.pacco-interreg.com

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 Promoting Adaptation to Changing Coasts (PACCo)

There's more about the Lower Otter Restoration Project at:



Lower Otter
Restoration Project

www.lowerotterrestorationproject.co.uk

There's more about the Saône territorial project at:



<https://basse-saone-2050.com>

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 Basse Saône 2050

The PACCo project partners

The Promoting Adaptation to Changing Coasts project is managed by experts from across the following project partner organisations:



The Environment Agency,
Lead Partner for PACCo



Conservatoire du littoral
French body which protects the country's coasts and lakes



DEFRA
Department for the Environment, Farming and Rural Affairs



The East Devon Pebblebed Heaths Conservation Trust
A charity formed by the landowners to protect the Pebblebed Heaths and the lower Otter valley



Terroir de Caux
Inter-municipality authority in the Normandy region



Commune de Quiberville
Local authority in which the project is happening