East Devon Pebblebed Heaths Conservation Trust

Promoting Adaptation to Changing Coasts (PACCo) Task 4: Lower Otter Socio-economic Evaluation

Summary report – LORP Semi-quantitative Natural Capital Accounting and Visitor/Resident Surveys (Work Package 2)

Date: March 2023

Version: 2 / ABPmer Project 4978, Report No.R.4155

Document version control and final sign-off:

Version #	Date	Description	Author (s)	Reviewed by	Approved by
1	7/02/2023	Draft	ABPmer	S Hull (ABPmer)	
2	10/03/2023	Final	ABPmer	S Hull (ABPmer)	

Published by:

ABPmer
Quayside Suite, Medina Chambers
Town Quay
Southampton
SO14 2AQ

This report should be cited as:

ABPmer, 2023. Promoting Adaptation to Changing Coasts – Summary Report on Lower Otter Socio-economic Evaluation and Surveys ABPmer, Southampton.

Further copies of this report are available here: Promoting Adaptation to Changing Coasts (pacco-interreg.com)

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Keywords:
Managed realignment, intertidal habitat restoration, nature based solutions, natural capital accounting, ecosystem services, socio-economic benefits, perception surveys

Work package lead:
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Foreword

The Promoting Adaptation to Changing Coasts (PACCo) project is cross-border initiative which is financially supported by the INTERREG VA France (Channel) England project co-financed by the European Regional Development Fund.

The broad aim of PACCo is to demonstrate that it is possible to work with stakeholders in estuarine regions to deliver a range of benefits for people and the environment by adapting pre-emptively to climate change. It has a total value of €27m, with €18m coming from the European Regional Development Fund (ERDF).

The project focuses on two pilot sites: the lower Otter Valley, East Devon, England and the Saâne Valley in Normandy, France.

For more information see: Promoting Adaptation to Changing Coasts (pacco-interreg.com)

Acknowledgements

We would like to thank all the partners in the PACCo team for their input and advice throughout the project. We are also very grateful to all the stakeholders who helped by providing instrumental background information, and all the residents and visitors who kindly took part in the 2021 and 2022 surveys.

Contents

1 Introduction

This short non-technical report provides a summary of the socio-economic assessment work undertaken as part of the Promoting Adaptation to Changing Coasts (PACCo) project, focussing particularly on a Natural Capital valuation of the Lower Otter Restoration Project (LORP). This project element has been led by ABPmer, with substantial input from the Economics for the Environment Consultancy (eftec); it was overseen by the East Devon Pebblebed Heaths Conservation Trust (EDPHCT) and the Environment Agency. This work has been undertaken as part of PACCo's Work Package 2.

This report summarises some of the PACCo-related socio-economic studies which have been undertaken over the past two years, culminating in the publication of the overall LORP natural capital account report in late 2022. It is structured as follows:

1. Introduction (this section);
2. Background to PACCO and LORP;
3. The visitor / resident surveys;
4. The Natural Capital Accounting protocol;
5. LORP Natural Capital Accounting results; and
6. Conclusions.

2 Background to PACCo and LORP

2.1 PACCo

The PACCo project is a collaborative cross-channel initiative that is financially supported by the Interreg V A France (Channel) England programme. The main aim of PACCo is to show how it is possible to work with stakeholders in estuarine regions to deliver a range of benefits for people and the environment by adapting pre-emptively to climate change.

The PACCo project has considered two nature-based estuary restoration projects which share many similarities and are facing comparable challenges. One site is in the lower Otter Valley in East Devon, England, and the other is in the lower Saâne Valley in Normandy, France. By researching and reviewing the lessons from these two climate change adaptation measures, the PACCo project is creating a model for the sustainable management of coastal and estuarine areas.

Both of these PACCo projects involve a 'managed realignment' of existing coastal flood barriers to create a more natural system, whilst meeting the needs of local communities.

Further details about the two projects are included in the various project reports, on websites[1] and in other sources of project documentation.

The aim of PACCo is to use the lessons from these two pilot projects to create a model for the sustainable management of coastal and estuarine areas that is transferable to other locations.

For Work Package 2, the socio-economic work, a comprehensive, partially quantitative, Natural Capital Accounting (NCA) exercise was undertaken for LORP only, to demonstrate how a more detailed and rigorous approach can be applied to assess natural capital related socio-economic values of estuarine restoration projects. An NCA can be rapid and qualitative or detailed and semi-quantitative. A rapid assessment has been applied to both the Lower Otter and Saâne Valley projects, and has been reported on in a separate report. This summary report focusses on the detailed accounting and associated work undertaken in relation to LORP.

2.2 LORP

The Lower Otter Estuary is on the south coast of Devon, in England, adjacent to the town of Budleigh Salterton. It is an attractive landscape that is both environmentally interesting and socially and economically valuable. The valley supports a variety of estuarine and freshwater habitats and species and is used for cattle grazing and recreation. It is a popular tourist destination and has a comprehensive network of footpaths, including the South West Coast Path which runs from one side of the valley to the other.

The LORP area is owned by Clinton Devon Estates, a major landowner in Devon. Clinton Devon Estates has progressed LORP in partnership with the Environment Agency, the government body which has responsibility for improving resilience to climate change, flood defence, increasing biodiversity and improving habitats and water quality.

LORP will restore the Lower Otter Valley to more natural conditions, closer to those that existed 200 years ago (prior to comprehensive human intervention in the valley, e.g. the construction of several land claim embankments). The River Otter will be reconnected with its floodplain, enabling the tide to come in and out as it once did, and also alleviating fluvial flooding issues. Figure 1 below summarises the key elements of the scheme.

[1] www.pacco-interreg.com/; www.lowerotterrestorationproject.co.uk/pacco.html; www.channelmanche.com/en/projects/approved-projects/promoting-adaptation-to-changing-coasts/

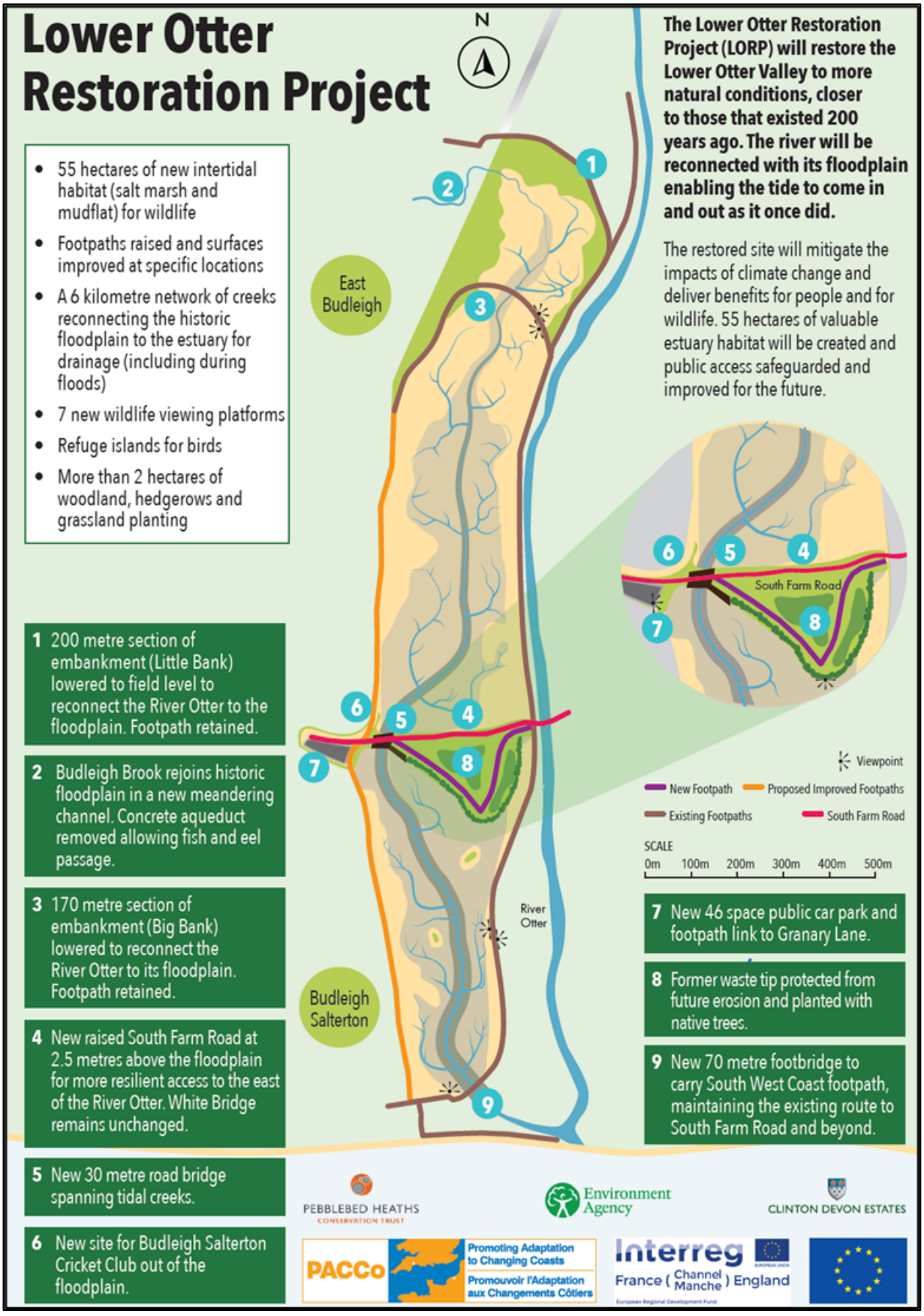

Figure 1. Poster on LORP

At the heart of the scheme is the managed realignment of the three marsh complexes which occupy the majority of the Lower Otter valley. This will be facilitated by breaching the Otter embankment on the south side of the estuary, sometime in 2023. The breach will be 70 m wide and will be cut down to mudflat levels, with a deeper channel through its centre connecting it with an existing fronting creek. Meandering creeks have been excavated into the three grazing marshes to guide the waters north, as well as across the marshes. A new 30 m span road bridge has also been constructed, and a minor road raised by up to 2.5 m (out of the floodplain) to maintain access to a business park and some residential buildings to the east of the valley. Post breach, just over 50 ha of intertidal habitats are expected to develop. Extensive mitigation has been undertaken for terrestrial species and habitats, and a substantial net gain in woodland and hedgerows is anticipated (in the remaining fluvial floodplain north of the managed realignment area).

3 The Visitor / Resident Surveys

3.1 Background and methodology - LORP

Alongside the NCA work, another key component of the PACCo project involves understanding the views and perceptions of stakeholders that will be affected and benefited by the proposed coastal and estuarine adaptation measures. To investigate these aspects, a series of stakeholder engagement surveys were undertaken for LORP (and also in France).

For these stakeholder engagement surveys, the team developed a carefully structured questionnaire which could be applied at both sites. This has been applied to the LORP throughout July and August 2021, and in the summer of 2022 (in the Saâne valley, it was utilised in 2022 only).

The survey was undertaken to understand how visitors perceive the LORP project through time, with the completed survey campaigns having been purposely undertaken at the start of the works and during the works. Further campaigns are envisaged for future years, so that changing attitudes can be observed.

The survey was targeted at both residents and visitors. To ensure a representative sample of the population, a combination of online, face-to-face or ‘in-person’ surveys were conducted (21% were in person over the course of the two years). To complement this work and encourage feedback, information leaflets were circulated, and posters were placed in key locations to tell the community about the survey. It was also advertised on local social media to reach a wider audience, and a prize draw was used to incentivise participation.

It is worth noting that there has also been a separate piece of work examining perception of the public engagement work which was carried out by the Environment Agency and Clinton Devon Estates, as part of Work Package 2 of PACCo. This has been undertaken by the University of Exeter and is reported on in a separate report.

The questionnaire for the survey was developed by ABPmer, the University of Portsmouth and the EDPHCT, with reviewing input by English and French PACCo steering group members. In the first year, it was structured into the following six sections:

- Section 1: 'Thinking about your typical use of the site' – up to eight questions on how respondents use the Otter valley, how often they visit and how much they spend;
- Section 2: 'Thinking about the place' – two questions about perceptions of the Otter Valley as it is at present (/was before construction started);
- Section 3: 'Thinking about plans for the future' – up to five questions about knowledge and perceptions with regard to the LORP; this includes several perception statements which respondents were asked to rank on a so-called 'Likert' scale (essentially a five-point scale);
- Section 4: 'Thinking about local decision making / communication' – six questions on stakeholder communication and consultation during the LORP planning and assessment phase; these were only posed to those respondents who were already aware of the LORP;
- Section 5: 'A little bit about you' – up to eight questions related to demographic aspects; and
- Section 6: 'Closing questions' – three questions related to follow up and the prize draw.

Section 4 was not included in the 2022 questionnaire, and some questions asking about how the construction phase had been perceived were added into Section 3 of the questionnaire for the 2022 campaign.

3.2 Results - LORP

To date just over 600 (valid) survey responses have been received over the two campaigns. Specifically, 334 were collected in 2021, and 269 in 2022. The majority of these, some 78% were derived from the online version of the questionnaire, with the rest being from face-to-face interviews.

Presenting all the results of the survey here would be beyond the scope of this short summary report; however, some key results are presented below.

Firstly, Figure 2 below shows how visitors utilise the site; this demonstrates that the main use of the site is by walkers. Between 25% and 31% (2021 versus 2022) tend to walk without a dog, and between 31% and 48% (2021 and 2022) with a dog. Other activities such as wildlife/birdwatching, photography, running and fishing were also identified by many respondents. Respondents stated that they tend to visit fairly frequently; around 50% of respondents indicated they visited the Lower Otter Valley at least 1 to 3 times a week; with 5% visiting more than once a day (2022 figures). The majority of respondents, some 55%, spent between 1 and 2 hours at the site. Most of the participants visited with others, and were from the local area. It is worth highlighting that the fact that a lot of online

respondents were ‘recruited’ through local social media groups would have skewed the surveys towards locals; 82% of respondents were from within a few miles of the scheme.

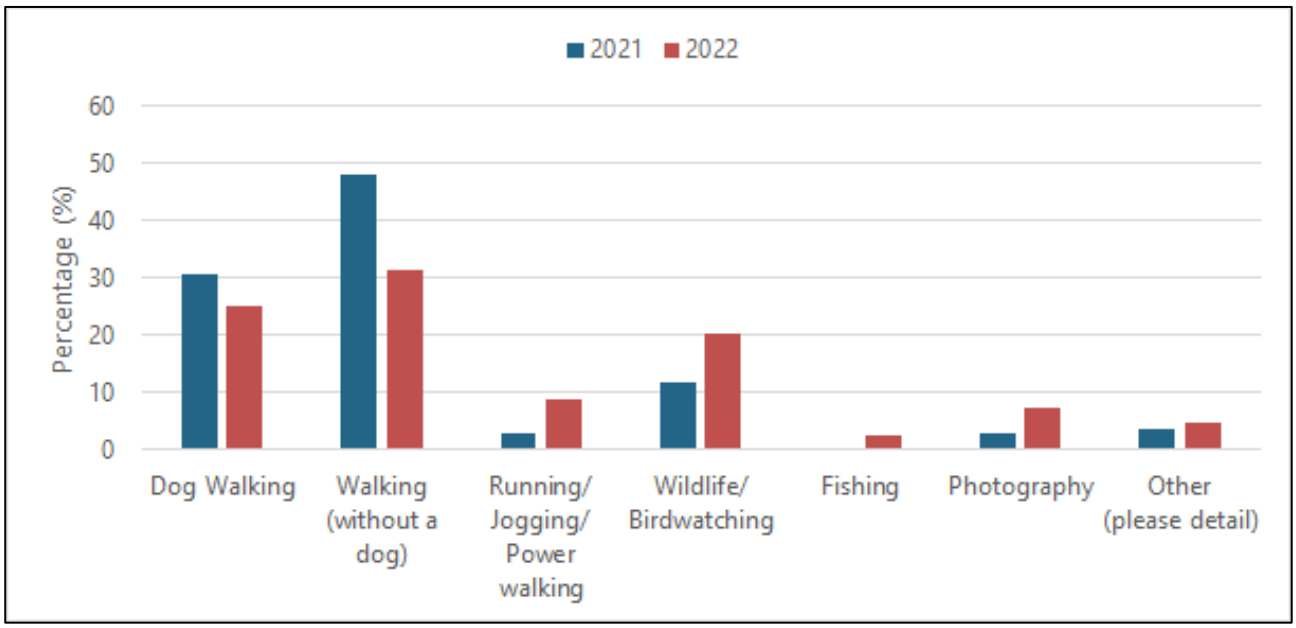

Figure 2. Answers in response to Question “What is the main activity you typically undertake when you go down to the site?”

The Lower Otter valley is appreciated for its wildlife, peacefulness and scenery, as can be seen from the graph in Figure 3, which summarises responses to the ‘What do you like best about the lower Otter valley’ question. Conversely, when asked what they liked least about the Valley, only 63% of respondents commented about this aspect, with many mentioning dogs and dogwalkers, as well as the fact that it can get quite busy along the narrow paths. During 2022, some 10% of respondents raised concerns regarding impacts of the construction works (e.g. noise, visual changes, footpath diversions).

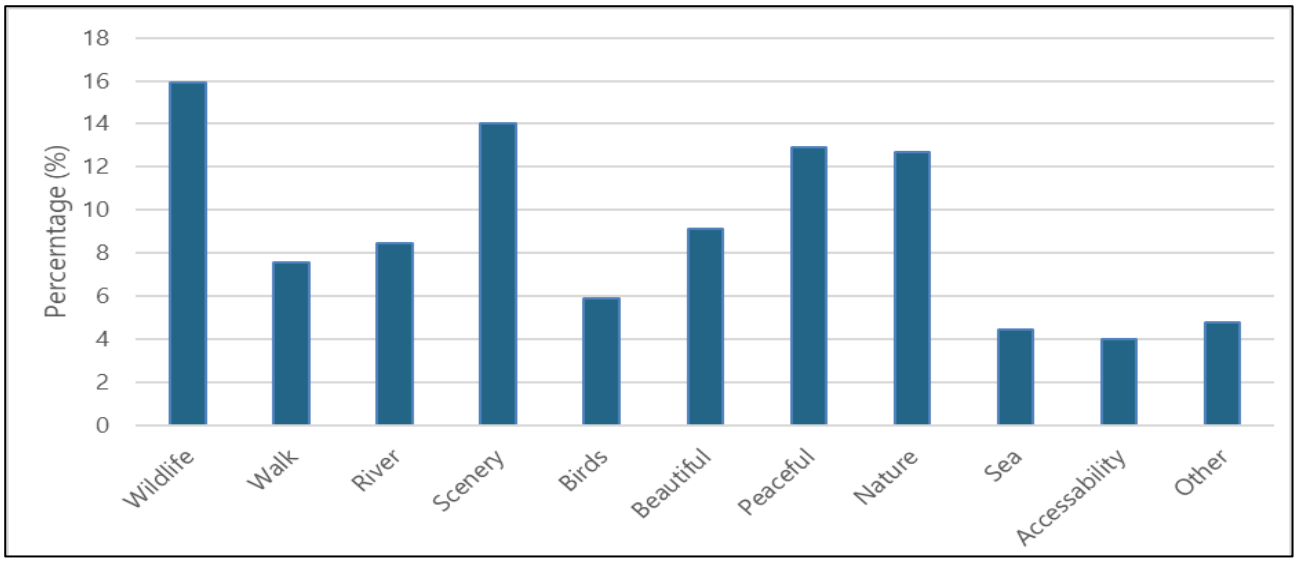

Figure 3. Answers in response to Question “What do you like best about the lower Otter valley?”

When asked about how natural they thought the valley was, most respondents (56%) perceived the valley / estuary as very natural in 2021; this probably reflected the appreciation of the natural features present in the valley prior to the scheme, but does not indicate a great deal of awareness of past human-influenced changes to the valley. There was a reduction of 13% for this view in 2022. This is likely to have been influenced by the start and visibility of the construction works in 2022.

With regard to their opinion on LORP, a question asking people how happy they were with the project was answered by 70% of respondents, the majority of whom stated they were happy with the project (44% either agreed or completely agreed in 2021; 51% in 2022). When comparing 2022 with 2021 responses, in 2022, the results were similar, but responses at the extremes were slightly higher, showing slightly greater polarization of views (completely agree 6% greater; completely disagree 4% higher); see Figure 4.

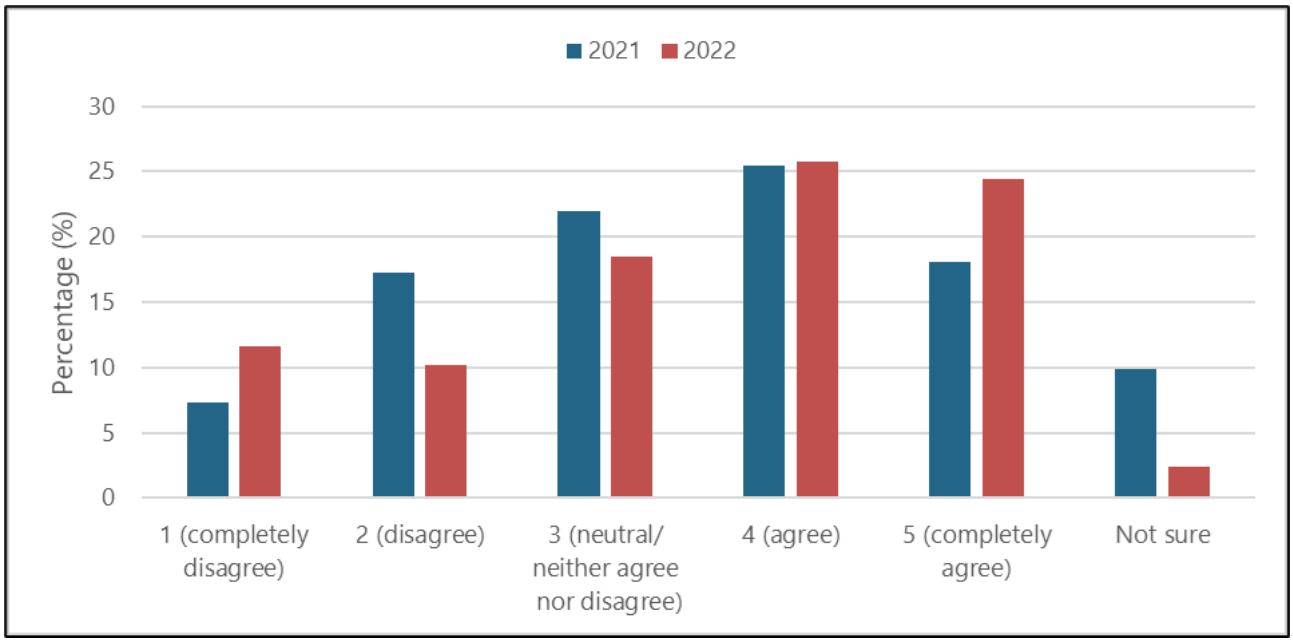

Figure 4. Answers in response to Question re. statement "I am very happy that this scheme is happening."

When asked about what concerns they had with regard to the project, the most frequent concerns related to impacts on local wildlife (terrestrial and marine) during the construction phase and to land-use changes, as well as over-engineering of nature and disruption caused by the construction works. A question on perceived benefits of the scheme revealed that respondents expected improvements to flood risk and resilience to climate change, as well as increases in biodiversity and natural habitats.

The results from the 2022 questions to gauge the opinion towards the construction phase are also worth summarising. One question targeted at understanding how disruptive the construction works had been showed that 33% of respondents thought it had not been disruptive, whilst 39% felt it had been. The remaining respondents answered as either neutral or had no opinion. Another construction related question revealed that people had

not come to the valley more often than they normally would to see the construction works in progress.

The full results are presented in the ABPmer 2021/22 survey report (ABPmer, 2023). Results from one further question are included here, as they helped inform the NCA. Specifically, a question was targeted at understanding whether or not people would visit the area more frequently due to LORP happening (in the medium to long term). In summary, 10% more people responded positively rather negatively to this question. This result was then utilised to inform the NCA visitor increase judgement (see Section 5 for more detail).

3.3 Saâne 2022 survey

In France, the first visitor/resident survey was undertaken in 2022 (May and June); this survey for the Saâne valley followed a slightly different questionnaire to that applied to LORP. For example, there were no questions about visitor spend, but there was a dedicated section on natural hazards and adaptation to climate change. Furthermore, French contractors elected not to undertake a prize draw. They did however place a similar emphasis on in-person interviews; in total, 400 questionnaires were completed, 20% of these face-to-face. Most respondents (66 %) were locals (see Syndicat mixte du littoral normand, 2022 for the French survey report).

Bearing these differences in mind, some common themes emerged. For example, in the Saâne Valley, users indicated they visit fairly frequently (although the frequency reported was slightly less than for the Otter Valley). Various features were highlighted as being of interest to respondents; the river, the beaches and cliffs (for hiking and foreshore fishing), as well as the wetlands (of the lower Saâne valley). The varied landscape enables a variety of outdoor activities; the most cited outdoor activities were walking, beach activities and wildlife watching (there are several long distance and local hiking trails in the area).

When asked about the anticipated benefits of the restoration project, improvements in the quality of the ecosystems was the most frequently mentioned one, followed by tourism benefits and reduction in vulnerability to natural hazards. Conversely, the most commonly expressed concern was regarding the economic benefits of the project. Other frequently expressed concerns related to the safety of homes / residents; environmental impacts on certain species, reduced attractiveness of the site and increased visitor numbers.

In the Saâne valley, when compared to the Otter valley, a larger percentage of respondents was in favour of the project than against (63% for, 16% against; noting that the question was posed slightly differently in France). Similar to the Otter surveys, the majority of respondents anticipated that they would visit the area more often after the project has been implemented. Here, the differential between ‘agree’ and ‘disagree’ was however much higher than in England (where it was 10%, see above), at around 57%; reasons for this are not immediately apparent, but could in part be due to the question having been posed slightly differently again.

4 The Natural Capital Accounting Protocol

4.1 Natural Capital Accounting

The concept of 'capital' can be defined as a resource that is used/available in the production of goods and services. 'Natural capital' is defined as '*that part of nature which directly or indirectly underpins value to people, including ecosystems, species, freshwater, soils, minerals, the air and oceans, as well as natural processes and functions*' (Natural Capital Committee, 2019). A natural capital approach to policy and decision making then involves distinguishing between the stocks of natural assets and the benefits that flow from them (Defra, 2020).

Natural Capital Accounting (NCA)[2] is an output of this approach. It is a tool, or methodology, that involves measuring changes in the stock of natural assets and describing the benefits (termed 'ecosystem services') that arise, by collating and analysing different environmental, economic and social data to understand human impacts and dependencies on nature (Figure 5). This NCA approach has been applied to both the Otter and Saâne valley projects; with a qualitative approach utilised for both (see separate report by Natural Capital Solutions Ltd, 2022 for results), and a semi-quantitative approach additionally applied to LORP (this report / full report: ABPmer and eftec, 2023).

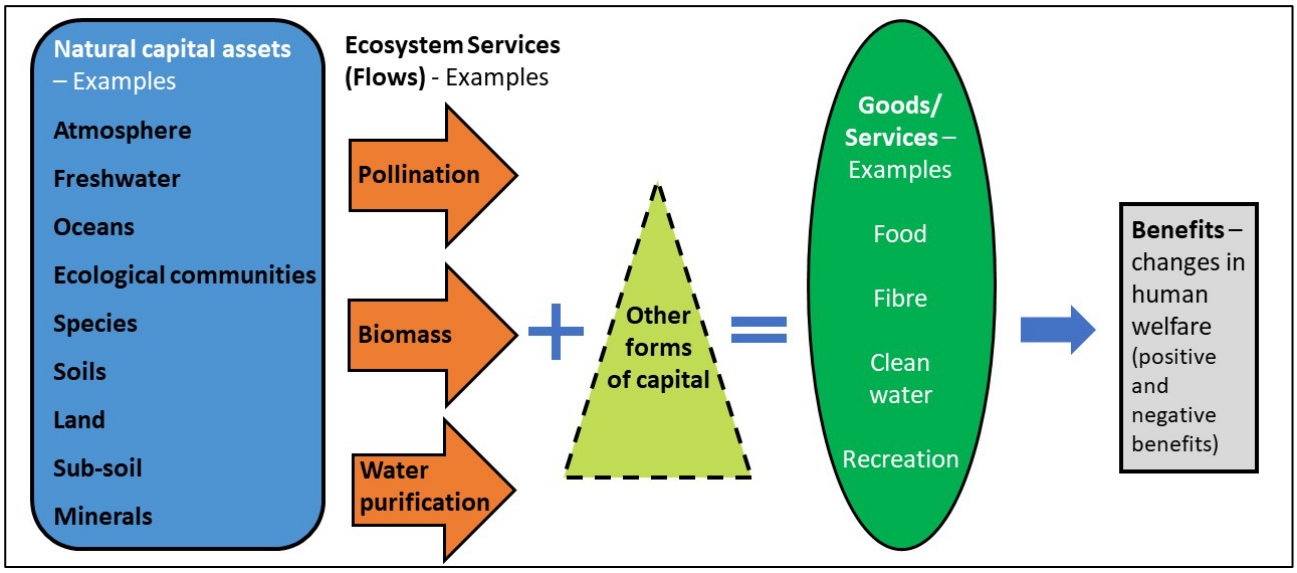

Figure 5 Natural capital logic diagram.

[2] An NCA approach involves measuring changes in the stock of natural assets and describing the benefits (ecosystem services) that arise. This approach is now widely advocated as a tool for managing the environment and supporting national and international economies that rely on natural capital. The Common International Classification of Ecosystem Services (CICES) approach to NCA is directly relevant to this cross-channel project and is increasingly being adopted across Europe.

4.2 The Protocol

The protocol was developed throughout 2021 (final report: ABPmer, 2021a), based on a methodology report written in early 2021 (ABPmer, 2021b). It was then applied, and further lessons were learned throughout its application. The Protocol described the NCA approach that would be utilised to value the effects and benefits of LORP specifically, as quantitatively as possible.

The Protocol envisaged a six-step process, preceded by scenario definition, to effectively form seven steps. These are set out in Table 1, which includes explanations for each step and a summary description of how this was conducted for the LORP NCA.

Table 1. LORP (semi-quantitative) Natural capital accounting steps

Step number and title	Step explanation	Step application for LORP NCA
0) **Scenario refinement**	At a minimum, the following two scenarios need to be assessed over a certain accounting period: 1. The baseline condition; to describe the current situation, and how that might progress into the future, without the project intervention; and 2. The post-restoration condition; to describe the impacts of the restoration scheme(s) being implemented.	Two scenarios were assessed: 1. Baseline scenario: it was assumed that an 'unmanaged' breach of the defences would occur in 15 years' time, and that some anticipatory and reactive adaptation measures would be undertaken (e.g. making safe of landfill within scheme area). 2. LORP: i.e. the project. As a 60-year accounting period was decided upon; forecasts needed to be made for both scenarios (e.g. how would intertidal habitats develop over time).
1) **Definition of study areas**	This should include the immediate study area(s) which would be directly impacted by the project, over the chosen accounting period.	There was an 'inside' and an 'outside' study area. As LORP allows for natural transition of habitats, the 'inside' study area was made big enough to include areas which saltmarsh may transition into over 60 years. Also, the relocation site of the cricket club was included. The 'outside' study area included those areas of the current estuary which might be impacted (up to 60 years into the future).

Step number and title	Step explanation	Step application for LORP NCA
2) **Scoping of assets**	This effectively involves determining what natural (and other relevant) assets could be affected now and in future; notably this would relate to habitats and species, but also assets which are not necessarily 'natural', but benefit from the site.	For LORP, intertidal and grassland habitats and species were obvious assets to include, as were woodland and hedgerow areas (polygons only; linear features could not be easily counted). 'Other', not necessarily natural, assets were included where they benefited from the scheme / its natural assets. E.g. the cricket club, which until last year was located on the LORP floodplain, was counted into the NCA, as was a business park east of the valley, which benefits from inundation-proof access being maintained across the valley.
3) **Determination of asset extent**	There needs to be an understanding of how much of an asset is present at the start of a given accounting period, for each scenario, and how these extents or volumes etc. might change over time.	This mainly focussed on the habitats which are located in the study areas, but also aspects such as footpath lengths, visitor numbers, and number of cows grazing. For habitats, dynamic 60-year forecasts were made based on ABPmer experience with managed realignment.
4) **Determination of asset condition**	This is important, as only assets which are in good condition will fulfil their potential (benefits); however, obtaining this information can be challenging, as data is often sparse.	There was relatively limited existing information on condition. Based on available information, it was largely concluded that habitats were in good condition prior to LORP, and would continue to be so in the future. The upstream 'water' asset was found to be in a poor condition based on existing water quality classifications.

Step number and title	Step explanation	Step application for LORP NCA
5) **Determination of costs and incomes**	This is related to the maintenance of the natural assets and associated benefits, as well as the costs of implementation / making the new intertidal habitats happen. Incomes directly related to natural assets should also be ascertained, where possible.	Getting this information was often challenging, as was disentangling the costs that are 'truly' related to the natural capital creation from those which may be important for scheme facilitation, but not necessary to create the new natural assets *per se*. Only overall and conservative cost figures could be applied for the LORP scenario, and many assumptions had to be made for the baseline (no LORP) scenario. Income from natural capital was determined for land rental, cricket club income, business park differentials (reduced income due to flooding), and car parking revenue differential (i.e. likely increases related to LORP).
6) **Determination and (where possible) valuation of ecosystem service**	First, the benefits which apply to the NCA need to be selected, and their likely materiality assessed. Then, particularly for those which are deemed most important, monetisation should be attempted, whilst avoiding double counting. For those benefits which cannot be valued in monetary terms, a narrative of their relative importance should be provided. Finally, a comparison between the baseline and restoration scenario should be presented, both for the ecosystem services themselves, and also the difference between costs and benefits.	This was the biggest element of the NCA. It is worth noting that no new primary studies were undertaken for the NCA, so eftec and ABPmer relied on existing, suitable, studies and tools. Ultimately, eight services could be valued, whereas many others could not. This was for various reasons, including: no studies for value transfer, double counting, non-materiality, no strict connection to natural capital, etc. Non-monetised services which could potentially be fairly high value if monetised included biodiversity, mental health benefits, new income streams for the cricket club, increased visitor spend, etc. A narrative on the potential relative importance of these services was included in the NCA.

5 LORP Natural Capital Accounting Results

The results of the LORP NCA show that, when compared to the baseline / as is scenario, the LORP scenario has clear additional benefits, with a total natural asset value improvement of *circa* £11.2 million (over the 60 year accounting period).

Figure 6 illustrates how these greater benefits from LORP are distributed across the seven ecosystem services/benefits which could be monetised. This shows that the vast majority of the benefit value is connected to benefits to wider society, in relation to physical health (value of avoided medical costs, cricket club), and also recreation welfare benefits. The latter are higher with LORP, as a 10% increase in visitor numbers has been assumed for the NCA, based on the survey results (Section 3.2) and on insights from similar schemes.

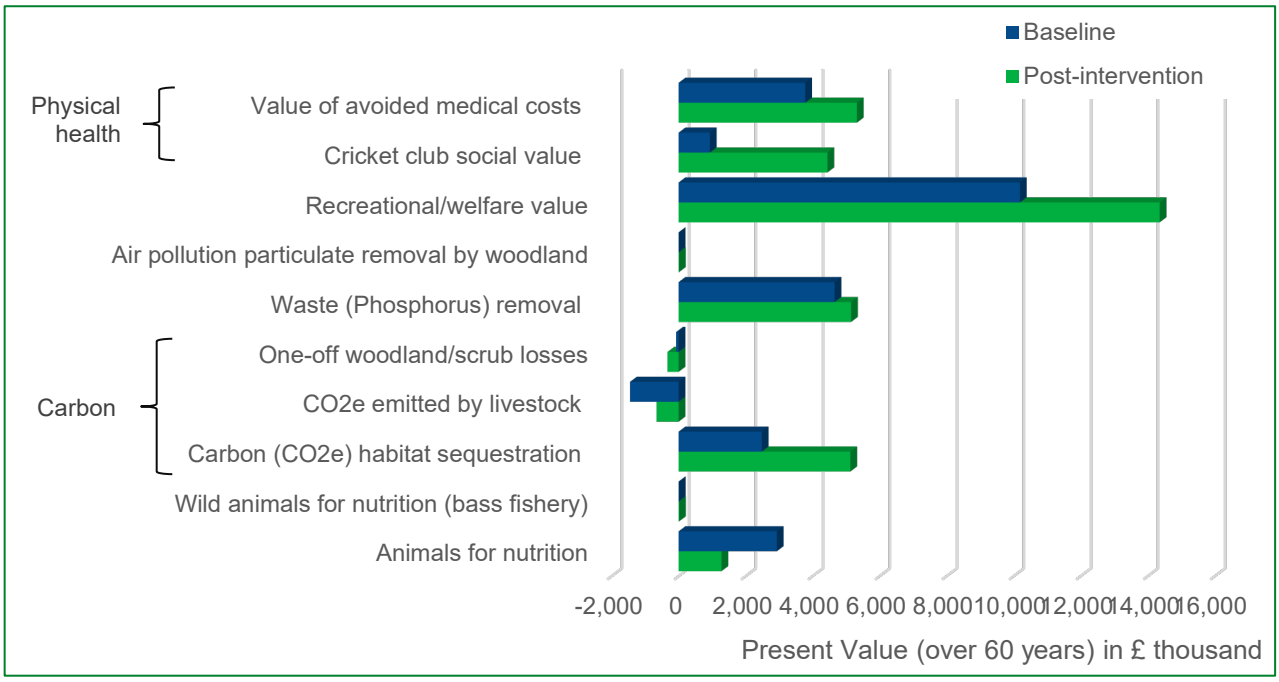

Figure 6. Value of monetised services

Nutrient cycling benefits, specifically phosphorus removal, are also associated with fairly high benefit values, as are those related to carbon sequestration/burial. With regard to the carbon calculations, whilst there are some one-off woodland and scrub losses with both scenarios[3], overall, there is net carbon burial over the 60-year accounting period. It has

[3] Please note however that not all of the net gain of woodland and scrub related to LORP could be taken into account (mostly due to most linear features not having been included in the account). Woodland/scrub losses are higher with LORP than the baseline scenario, as the woodland/scrub on the landfill (which generally is high enough not to be inundated by the tides) was taken down at the beginning of the construction works; this will be replanted with native species. Furthermore, please note that construction related carbon emissions were not taken into account.

been estimated for this NCA that the new intertidal habitats created by LORP will bury almost 8,000 tonnes of carbon over 60 years. On average, every year, the new habitats will bury enough carbon to offset the annual fossil fuel consumption of around 290 cars (based on 2022 car emission values).

Once benefit values, as well as costs and incomes are taken into account, the net difference between the two scenarios was calculated as £5.8 million, whereby the baseline scenario ostensibly performs 'better' than the restoration/LORP scenario.

This is for a variety of reasons and it is considered that the benefit:cost results of this partial NCA underestimate the full value of LORP and its value relative to an unmanaged breach baseline scenario. This is for various reasons, including:

- The costs for LORP are relatively high. However, not all the LORP costs are directly related to the creation of natural capital. For example, the bridge and road construction works (which account for a very large percentage of the LORP costs), whilst undoubtedly necessary to bring the scheme to fruition, are not strictly speaking required to make the new intertidal habitats happen. However, these costs could not be disentangled for the purpose of this NCA;
- The baseline scenario, whereby it has been assumed that an unmanaged breach would occur in 15 years' time, would result in a situation which, though far from optimised, is nevertheless somewhat similar to the project outcome with regard to the habitats resulting from it;
- It is likely that the impacts of unmanaged breaching (baseline) would be much more costly than has been assumed. For example, the costs included for constructing a new footpath are likely underestimated (as a lot of the works would need to be undertaken in the wet), and various other adaptation costs were not included;
- The NCA's benefit estimates are broadly conservative, whereas the costs of LORP will include contingencies and optimism bias; and
- There are several non-monetised benefits, notably related to biodiversity and mental health enhancements, which would likely be higher in the LORP scenario than in the baseline one, and could be offset against the overall value figure.

With LORP, it is also important to note that the project's initial 55 ha of intertidal habitat creation (mudflat, saltmarsh, tidal reedbeds) act as compensatory habitat to enable the Environment Agency to continue to manage flood risk to 2,795 properties (increasing to around 5,000 by 2110) in the Exe Estuary. This management causes coastal squeeze (the loss of existing habitat in front of defences resulting from rising sea levels that drown out the existing foreshore habitat), which gives the Environment Agency the statutory duty to secure compensatory habitat. Delivering habitat compensation in the Otter Estuary will allow six flood risk management projects to go ahead in the Exe Estuary, with an estimated direct cost of around £23 million, and total benefits of £375 million (Environment Agency, pers. comm.). Thus, substantial additional off-site benefits result from LORP being implemented, which could not be included in the NCA, but are worth highlighting.

Overall, factoring in the broader benefits of the scheme, the value of the scheme to society is considered to be positive.

6 Conclusions

Undertaking the semi-quantitative NCA has been a very worthwhile exercise, as it is helpful in identifying and seeking to quantify the multiple benefits of potential interventions which can help with stakeholder acceptance, as well as with other aspects such as funding. The LORP NCA has shown that there are clear advantages to undertaking managed realignment when compared to the pre-LORP situation.

However, those wishing to undertake a similar quantitative NCA for marine or coastal nature-based solution schemes should be aware of the following insights gained from the LORP NCA:

- Such an exercise should not be undertaken without having environmental economists on board, ideally with experience in valuing the services of the emerging intertidal habitats;
- Existing surveys and Environmental Statements etc. are invaluable in determining baseline conditions and facilitate forecasts, but are unlikely to be enough. New surveys and/or calculations and studies may well be required to determine asset extent and condition, now and in the future;
- Many assumptions need to be made. These need to be developed in consultation with stakeholders as much as possible. However, at some point, a cut off needs to be stated, the best consensus accepted and the assumptions utilised unchanged from then on (not everyone will agree with all the assumptions). For example, predicting the future is challenging and requires many assumptions which can materially affect valuation. This includes assumptions about when change will occur, the scale of such change and how such change might affect the levels of ecosystem service/benefits;
- Some information (on costs) may be sensitive and kept confidential, and breakdowns may be difficult to obtain;
- Valuation evidence on some benefits can be weak;
- Benefit cost calculations can be challenging, especially where it is not possible to disentangle overall project costs from those related to the creation or improvement of natural assets per se (e.g. new road and bridge costs for LORP not strictly speaking related to creation of new mudflats and saltmarshes);
- More (primary) research is recommended to fill some of the gaps identified (e.g. wider fisheries benefits), and to facilitate the monetisation of more services and benefits.

The resident / visitor surveys have been very valuable in gaining insights into attitudes towards both the LORP and Saâne schemes whilst they are being implemented. Going forward, further regular survey campaigns are envisaged; it will be interesting to see how opinions evolve as the schemes are finished and the new intertidal habitats then develop and mature. Following the schemes in the medium to long term in such a fashion would lead to the collection of a unique dataset which has not been matched at any existing European nature-based estuary restoration projects to date.

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