# ReMeMaRe

Environment Agency

**Scarborough Spa**

**11-12th July, 2023**

OCEAN & COASTAL FUTURES

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# Conference Details

http://coastal-futures.net/rememare-2023

Twitter: #ReMeMaRe23
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# Q&A / Panel Debate

Slido

https://www.slido.com/

#4089543

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# ReMeMaRe Conference 2023

## *Barriers & Opportunities*

## *Session 5*

OCEAN & COASTAL FUTURES

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# SESSION FIVE

## CHAIR: Dr Ben Green

### Environment Agency

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# SESSION FIVE: BARRIERS AND OPPORTUNITIES

## Scaling up our experiences

***Are the enablers in place to meet our ambitious targets for estuarine and coastal restoration?***

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# BARRIERS AND OPPORTUNITIES


## Eve Leegwater, Environment Agency


### Enabling restoration through regulation

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# Enabling Estuarine & Coastal Restoration Through the Regulatory System

**Eve Leegwater**

**Environment Agency Estuaries & Coasts Planning Team**

Environment Agency

Lower Otter Restoration Project, Devon. Photo: Lydia Burgess-


Lower Otter Restoration Project, Devon. Photo: Lydia Burgess-Gamble


COMPLEXITY
TIME
COST
sustainable
development
improvement
resilience
biological
areas
plan
environmental
marine
protected
ospar
environment
convention
climate
quality
strategy
diversi

Photo: Angie Gall

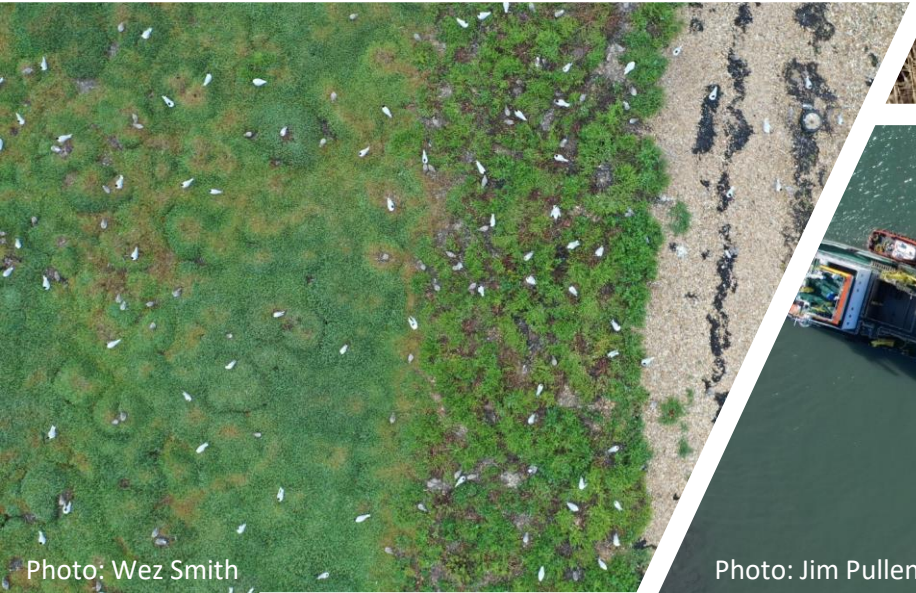


Photo: Wez Smith

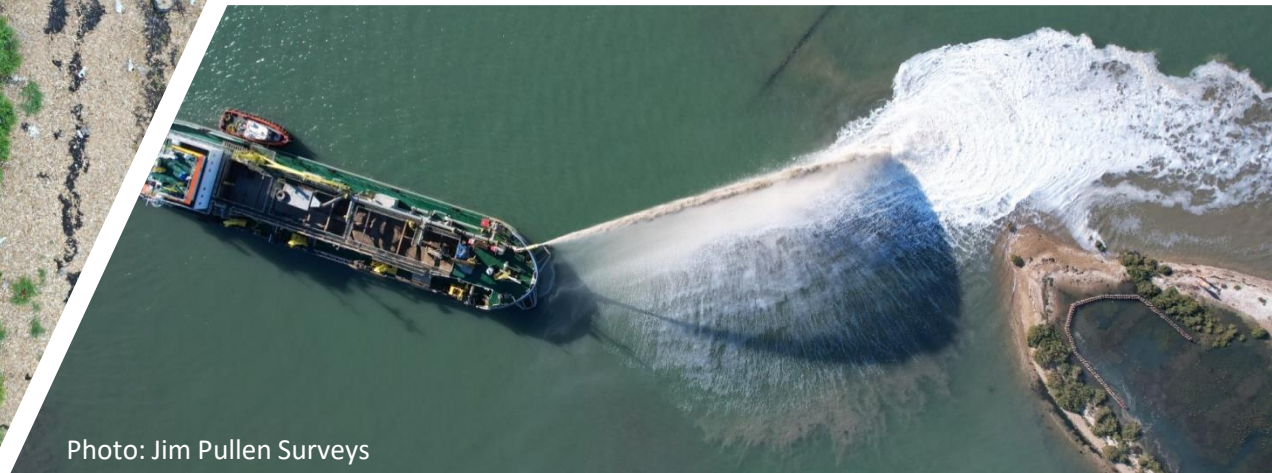
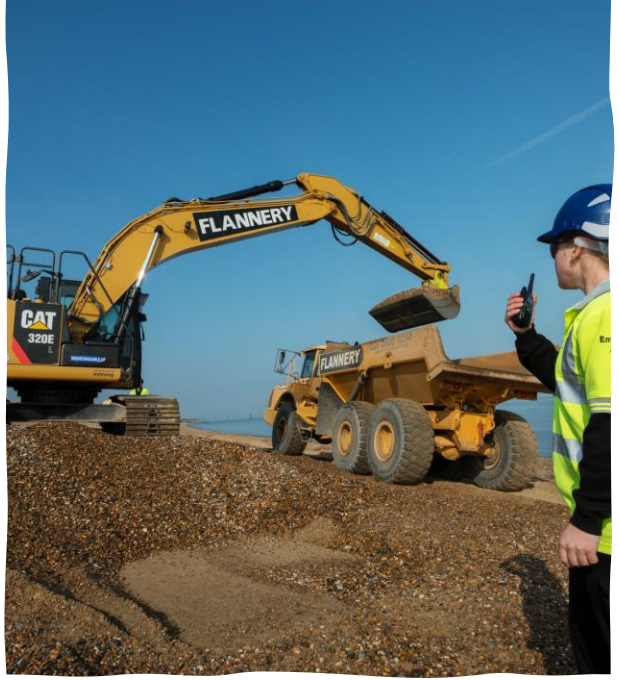


Photo: Jim Pullen Surveys

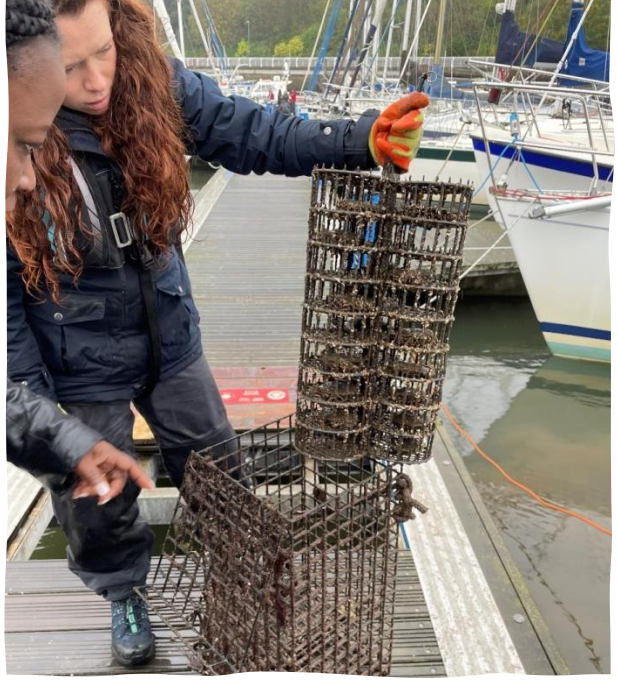

# Estuarine and Coastal Restoration Strategy

- Appropriate governance structure
- ReMeMaRe Delivery Plan
- Link to NBSAP, LNRS, RBMP, SMPs, Marine Plans etc..
- Set restoration targets – linked to EIP targets

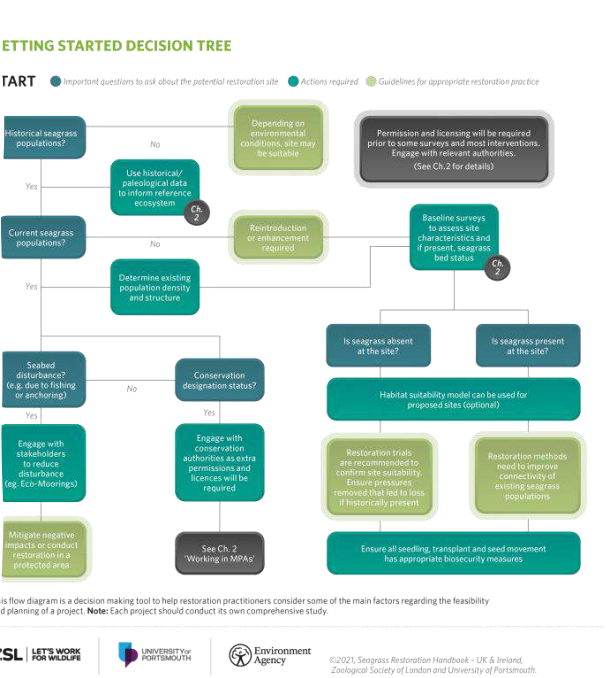

# Separate determination process

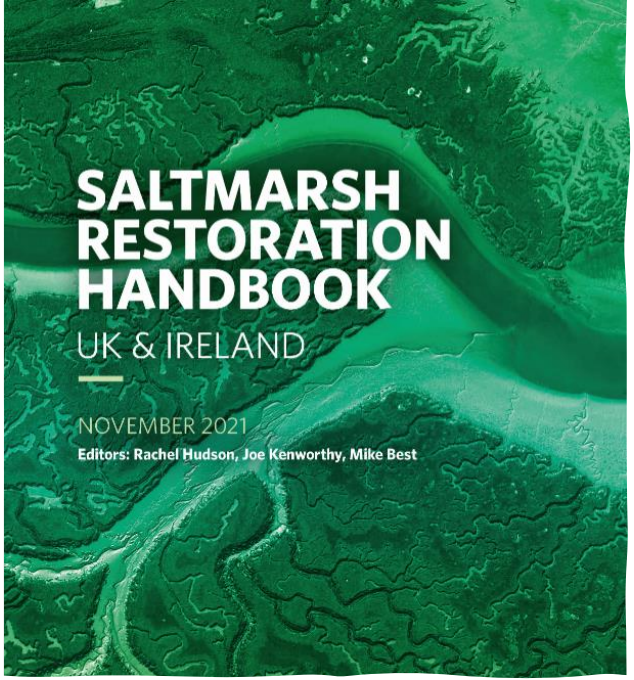
- Solely for restoration activity
- Different assessment process
- Different financial mechanisms
- Economically focused activities take a separate route




# Subsidies

- Habitat restoration
- Not for profit
- Non-commercial
- Not include Biodiversity Net Gain activities





# Upskilling

- Guidance for Applicants
- Restoration Training
- Case Officer Desk Notes
- Developing future practitioners


Photo: Essex Wildlife Trust

Photo: National Trust


Photo: Evie Furness

# Potential self-service activities

- Planting of seeds or plants
- Laying of oyster cultch
- Installation of coir rolls
- Installing eco-mooring

# Next steps?

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# BARRIERS AND OPPORTUNITIES

**Susanne Armstrong, ABPmer**

**Recent advances in the beneficial use of dredged sediment for restoration**

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# ReMeMaRe Conference 2023, 12 July 2023

## Project Updates - Beneficial Use of Dredge Sediment

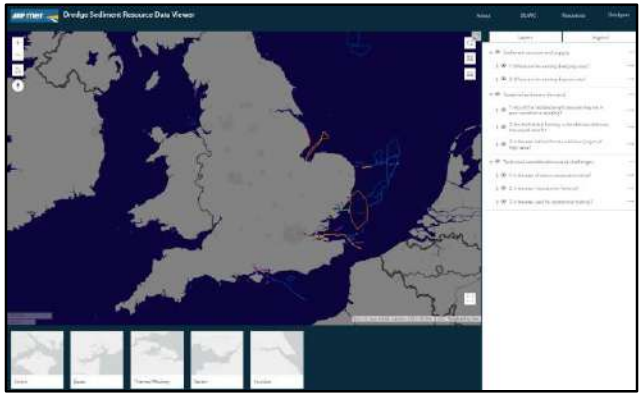
Susanne Armstrong

# Beneficial Use Projects

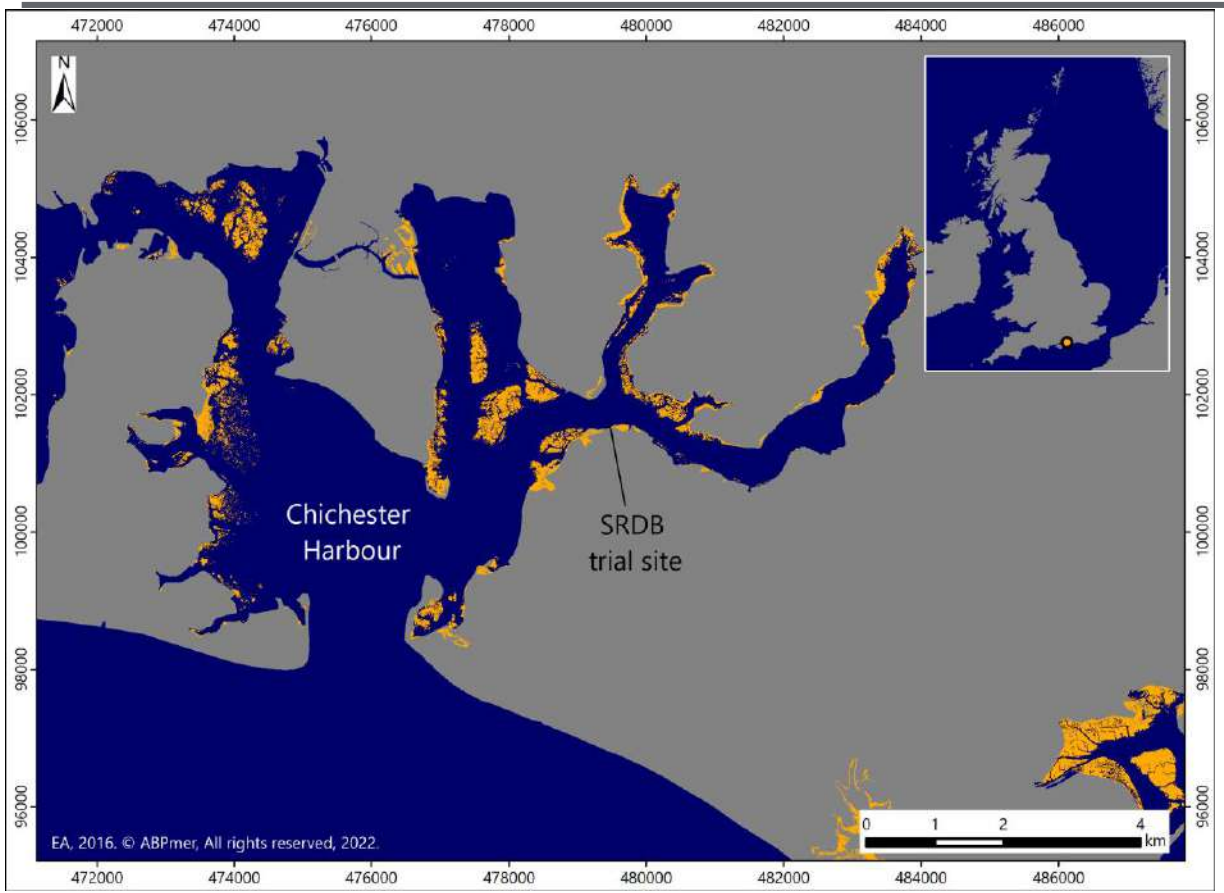
- **Many projects in development, including**
  - West Itchenor (Land & Water, Earth Change, Solent Seacscape, CHaPRoN);
  - Lymington projects (LHC; Solent Forum);
  - Holes Bay (BCP);
  - Fleetwood for 'Our Future Coast' FCRIP, ABP, and Environment Agency;
  - Essex for Blackwater and Colne Partnership;
  - Clyde and Medway for Peel Ports.

- **Dredge Sediment Resource Portal** for Beneficial Use Working Group (BUWG) funded by:

  Environment Agency ReMeMaRe; Natural England; Defra; Welsh Government/NRW, The Crown Estate.



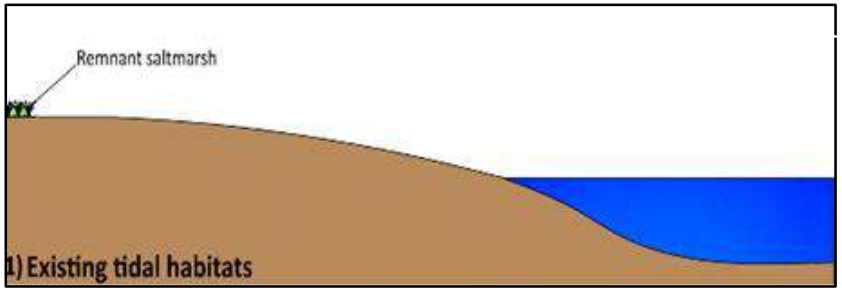
# West Itchenor (*Land & Water, Earth Change, Solent Seacscape, CHaPRoN*)

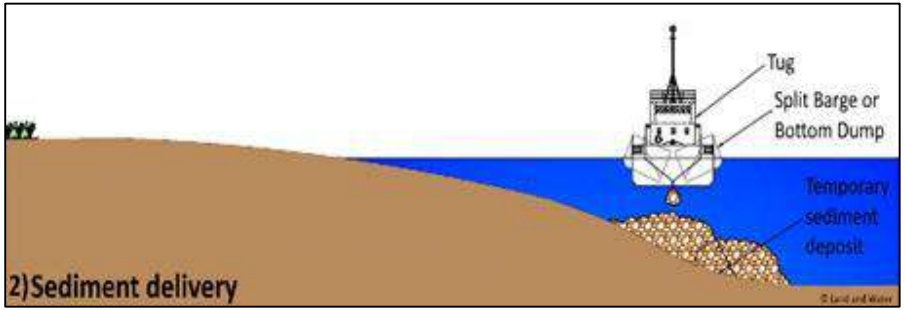


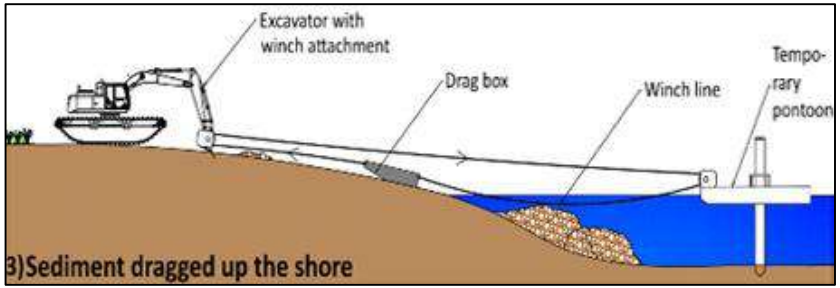


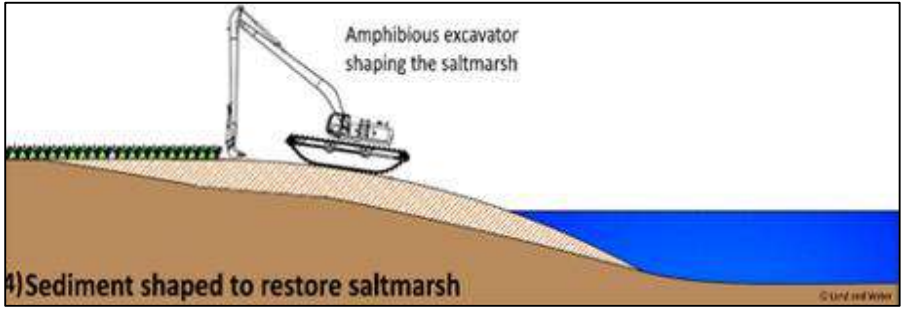
https://www.omreg.net/query-database/0033-west-itchenor/

# The Land and Water Saltmarsh Restoration 'Drag Box' (SRDB)



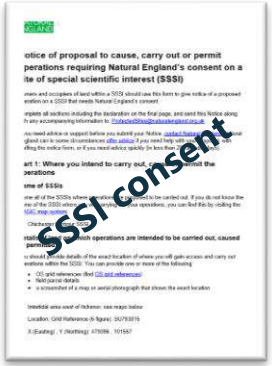



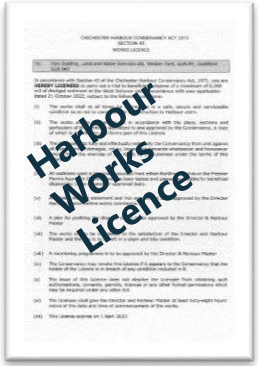



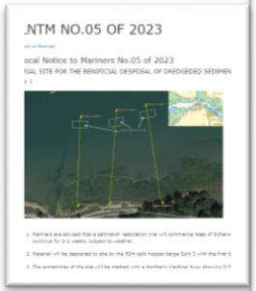

*Images by Land and Water Services Ltd.*

# West Itchenor – permissions and licences

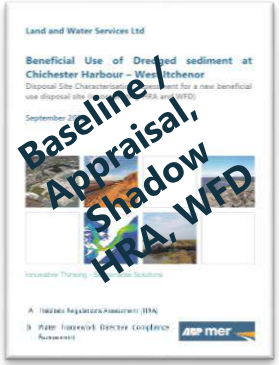
- Obtaining permissions and licences …

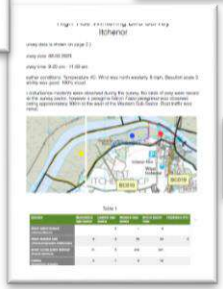







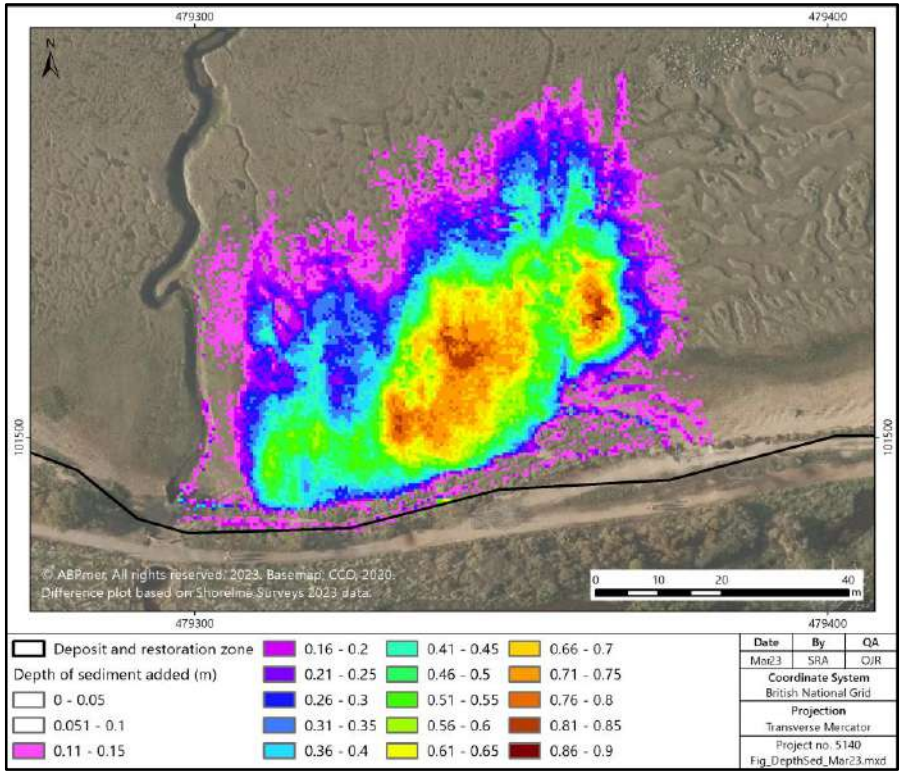





# West Itchenor - works

*Images by ABPmer and Land and Water Services*

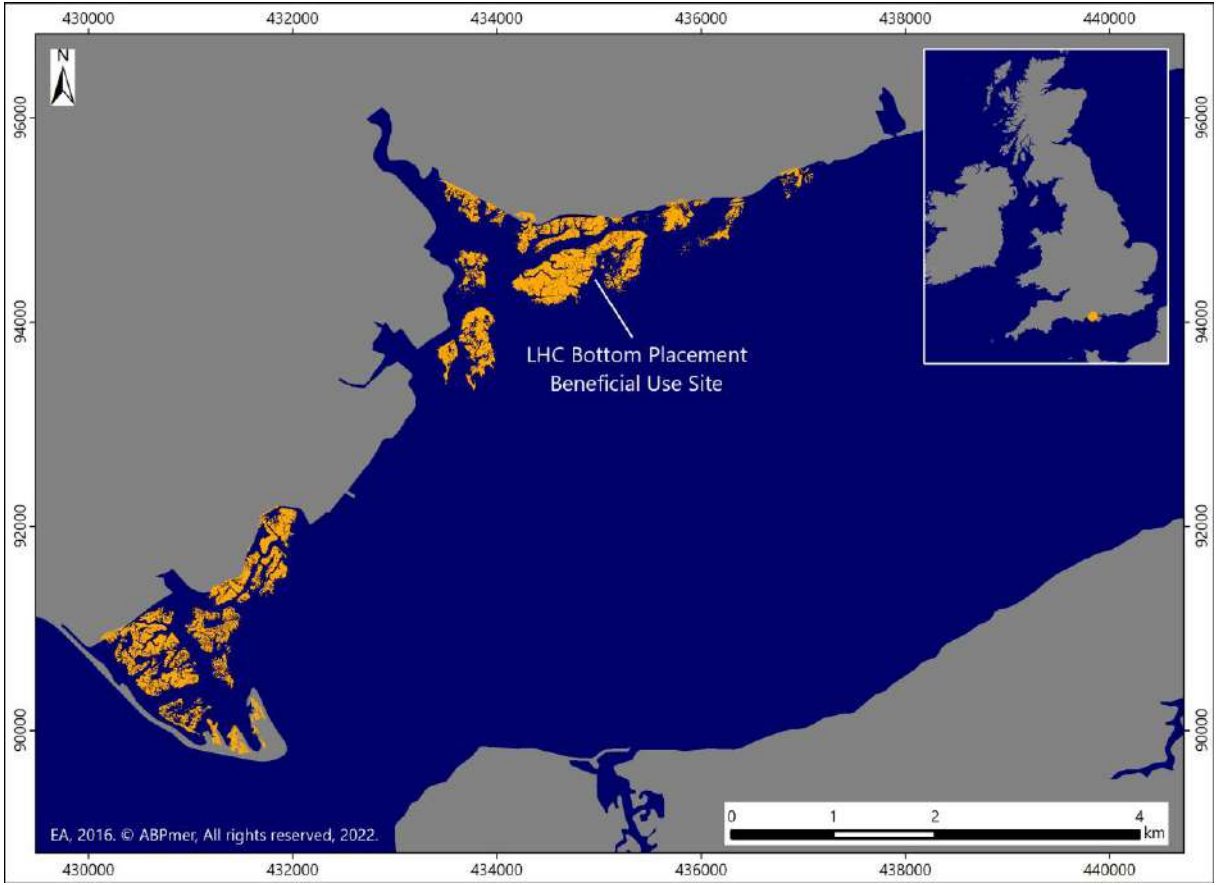
# West Itchenor - *monitoring*







# Boiler Marsh (*Lymington Harbour Commissioners Land & Water, Earth Change*)




https://www.omreg.net/query-database/0018-boiler-marsh-placement-lymington/

# Boiler Marsh (*Lymington Harbour Commissioners Land & Water, Earth Change*)

*Images by ABPmer and Solent Forum*

## Thank you for your attention

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Innovative thinking, sustainable solutions

ReMeMaRe

# BARRIERS AND OPPORTUNITIES

**Evonne Maxwell, Jacobs**

## Nurseries and aquaculture – scaling up for restoration

Environment Agency

**Scarborough Spa**

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Jacobs Challenging today. Reinventing tomorrow.

# Nurseries and aquaculture – scaling up for restoration

A ReMeMaRe Study

# Background

- In England, recent centuries have seen the loss of: 85% of saltmarsh; seagrass meadows from up to 50% of the waterbodies where it was previously found; and over 95% of native oyster reefs.

- ReMeMaRe target to restore at least 15% of these priority habitats by 2043.

- How can nurseries and aquaculture facilitate restoration to meet ambitious targets?

- Review of existing UK saltmarsh and seagrass nurseries and native oyster hatcheries was undertaken.

# Saltmarsh

- Current saltmarsh restoration practices in the UK do not generate significant demand for saltmarsh nursery stock.
- Existing facilities limited to a single dedicated commercial supplier and small project-based greenhouses.

# Saltmarsh

- ReMeMaRe restoration target of 5,325ha by 2043.
- Using an average planting density of 6 plants per $m^2$, 1ha of planted saltmarsh would require 60,000 plants. To achieve ReMeMaRe targets, this would equate to over 13 million plants per year.
- With existing suppliers able to produce approximately 2.8 million plants per year, a 5-fold increase in output would be required.

# Seagrass

- Large-scale seagrass restoration is a developing practice and therefore there is no single method that will achieve the conservative target of 550ha by 2043.
- Existing facilities are generally project based and often split into individual seed processing and nursery sites.



# Seagrass

- In order to meet the ReMeMaRe target of 550ha would require:

| | Total Requirement | Annual Requirement | Facility Requirement | Approximate Increase from Existing |
|---|---|---|---|---|
| Seed bags | 275 million seeds<br>(5.5 million bags) | 18.3 million seeds | 92 OBC tanks | x4 |
| Dispenser Injection Seeding | 2.75 billion seeds | >180 million seeds | 920 OBC tanks | x40 |
| Seedling mats | 22 million seeds<br>(220,000 seedling mats) | 14,700 seedling mats | 1,850$m^2$ lab tanks<br>4,900$m^2$ ponds | x25 |
| Individual plants | 45.8 million seeds<br>(2.75 million plants) | 183,000 plants | 12,200$m^2$ ponds | x450 |

# Native Oyster

- Existing commercial value leads to a different situa
- Several native oyster restoration practices are curr
- Current UK facilities are primarily related to comme

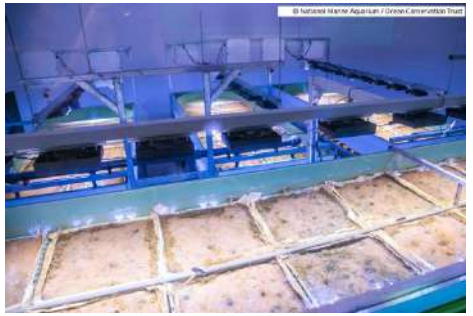

# Native Oyster

- Based on densities quoted by projects and in the Native Oyster Habitat Restoration Manual, in order to meet target of 100ha by 2043 would require the introduction of 100 million oysters.
- Existing commercial hatcheries in the UK have this capacity but lack regular demand.
- Output from newly established hatcheries appears unreliable.
- Spatting ponds have the potential to produce up to 0.75 million oysters per 900m$^2$ pond but are dependent on environmental conditions.

# Flexible Facilities (Seascape Hubs)

- The facilities for each habitat type have several similarities
  - Seawater supply/treatment
  - Ponds
  - Polytunnels
  - Research capabilities

- A combined facility or seascape hub can provide all these things and more
  - Adaptable set-up
  - Potential multi-species system
  - Enhanced volunteering/outreach potential



# Facility Cost

- Rough order of magnitude costs were calculated for a variety of different facilities.
- Single feature facilities mostly ranged from £150,000 to £1 million.
- Seascape Hubs were more expensive but costs were spread across multiple features.

## Outcomes

- For saltmarsh, upscaling nursery facilities is unlikely to be required.
- For seagrass, it is difficult to predict which type of facility would be most suitable, therefore a combined facility is likely to be the most suitable and most cost-effective.
- For oyster, existing commercial suppliers have the ability to meet targets but guaranteed demand is required. Spatting ponds could provide a regional capability.
- A network of regional seascape hubs provides the ability to tailor facilities depending on needs, incorporate a research element and encourage volunteering/outreach.

## Next Steps

- Production of a digital tool for tracking restoration demand.
- Further research into the potential for collaborative facilities.
- Further research into multi-species aquaculture and vertical farming.
- Explore options for wider economic benefits

# Have something to add?

- We are still welcoming input
- Please get in touch either directly or provide feedback via the online form

Report

Online Feedback

# Copyright notice

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# BARRIERS AND OPPORTUNITIES

**Peter Barham MBE, Chair SUDG**

## Net Gain – an opportunity for marine industries

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# BARRIERS AND OPPORTUNITIES


## Zahra Ravenscroft, Environment Agency


## Tees Tidelands – A coastal restoration BNG case study

Environment Agency

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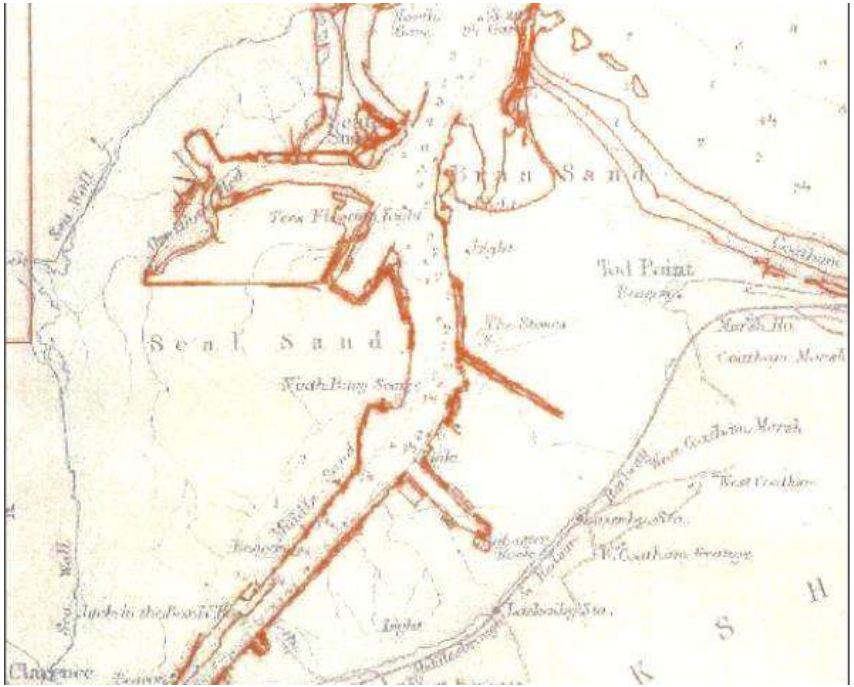
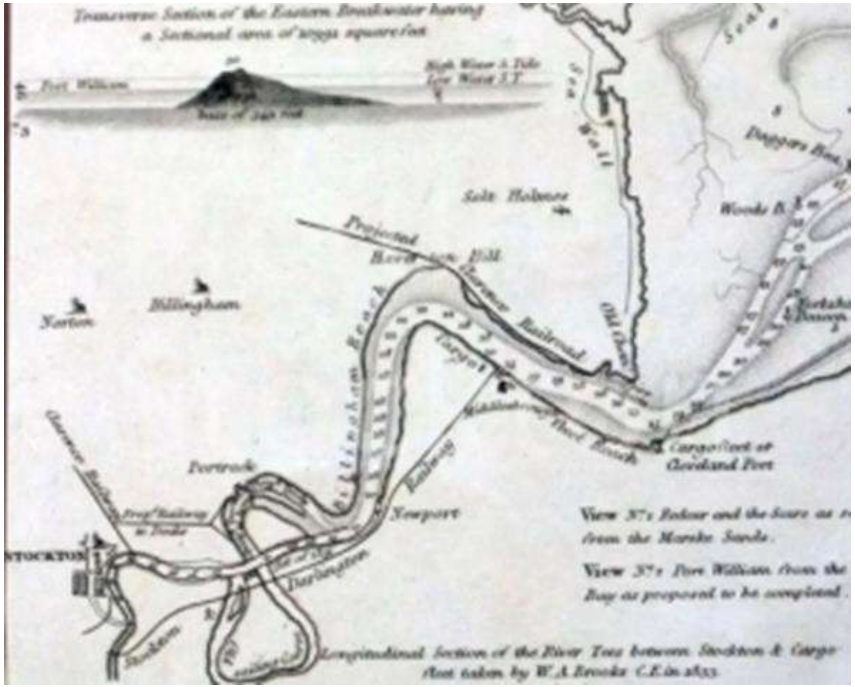
# Tees Tidelands - A coastal restoration BNG case study

Zahra Ravenscroft Strategic Partnership Manager
Environment Agency

# The Tees Estuary



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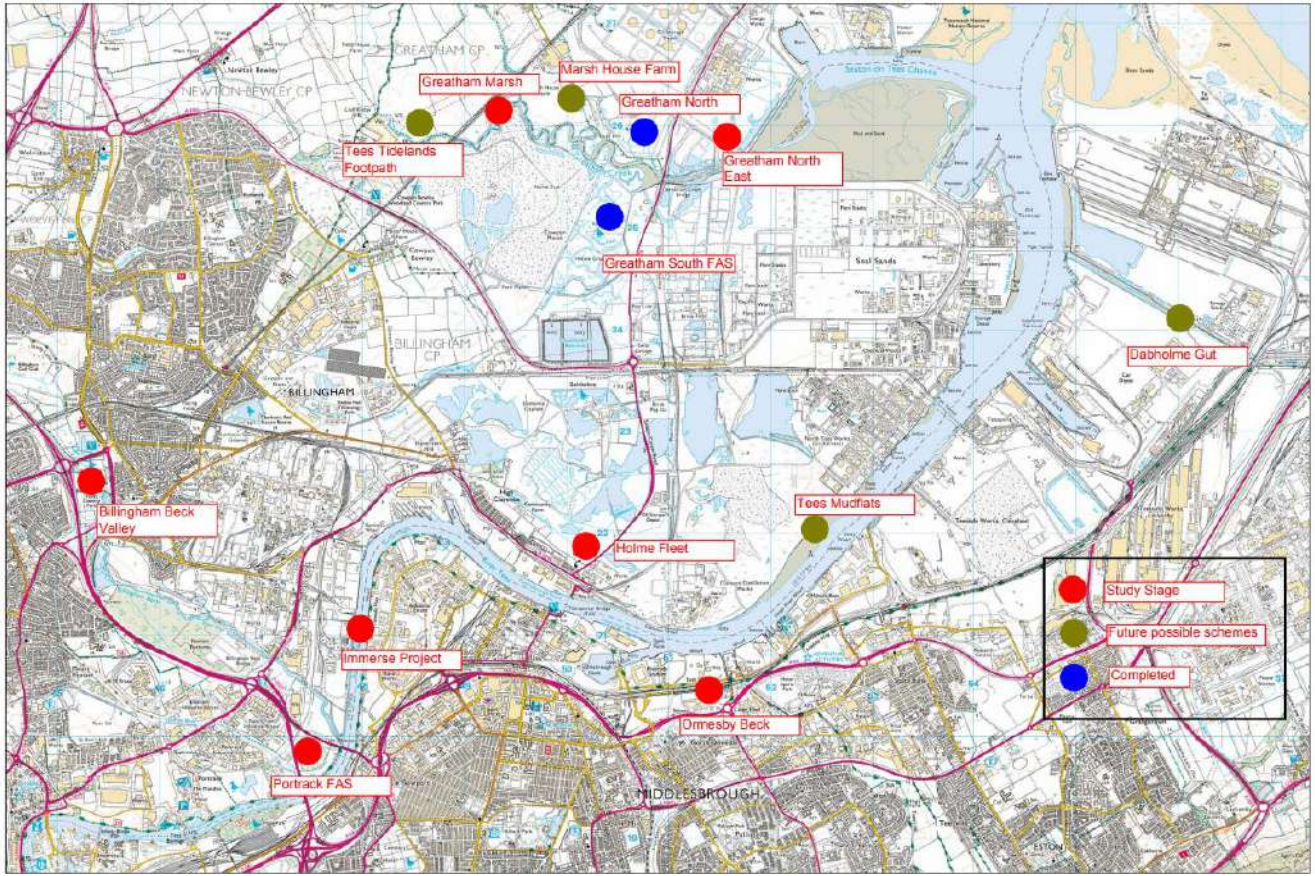




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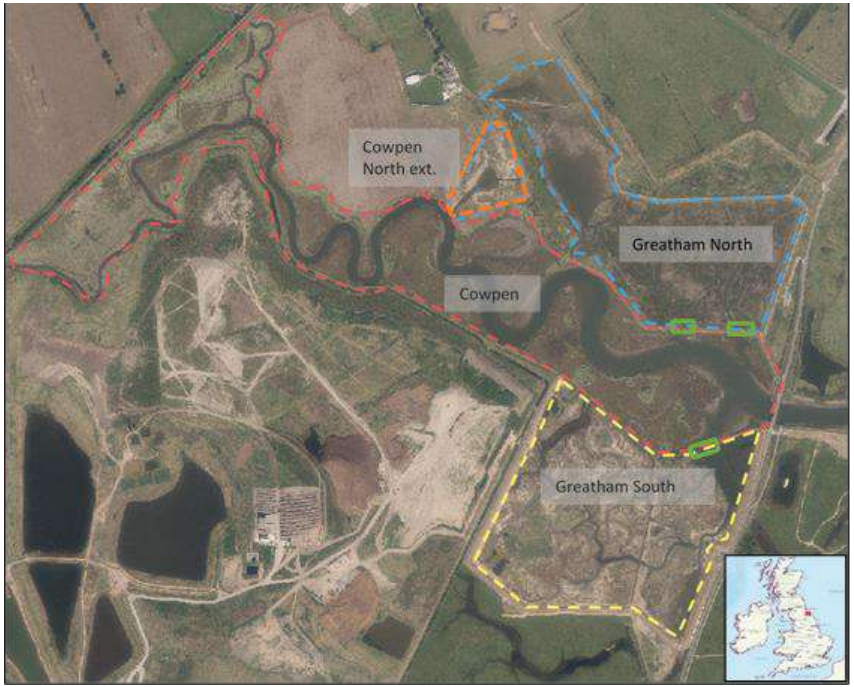
# Greatham North (2014) & South (2018) Managed Realignment



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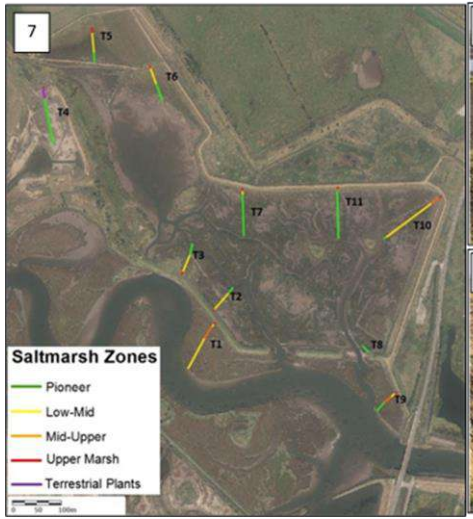
7
T5
T6
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T11
T10
T3
T2
T1
T8
T9
Saltmarsh Zones
Pioneer
Low-Mid
Mid-Upper
Upper Marsh
Terrestrial Plants


8


9

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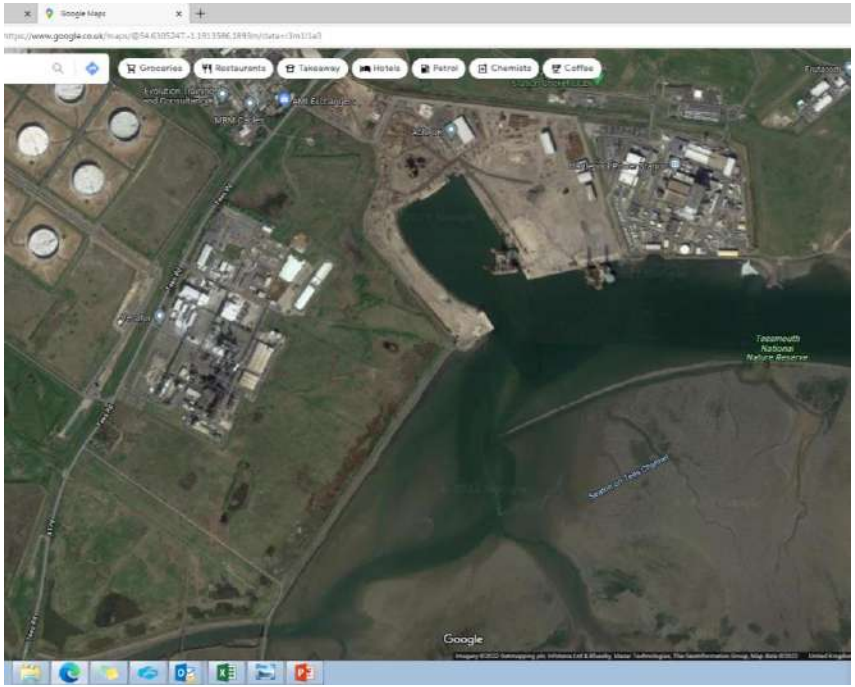
# Greatham North East Flood Alleviation Scheme



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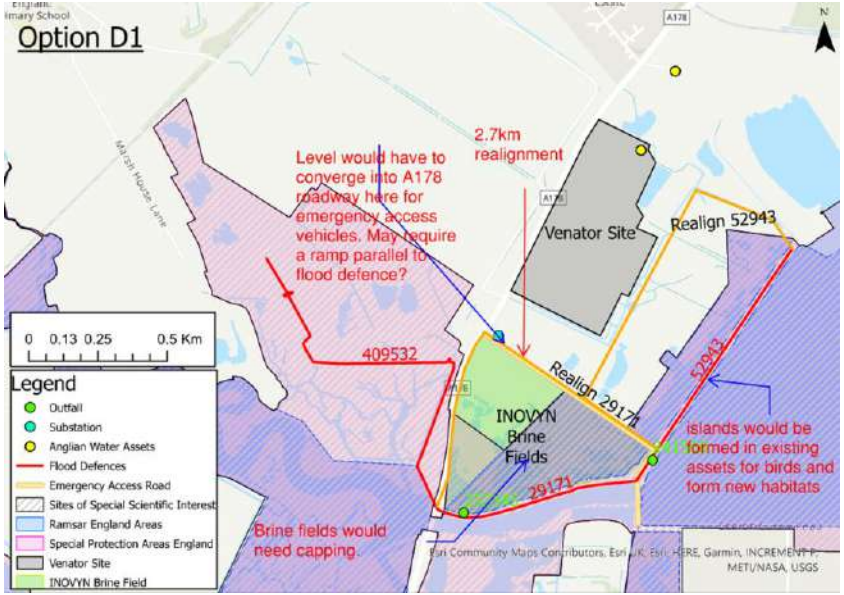
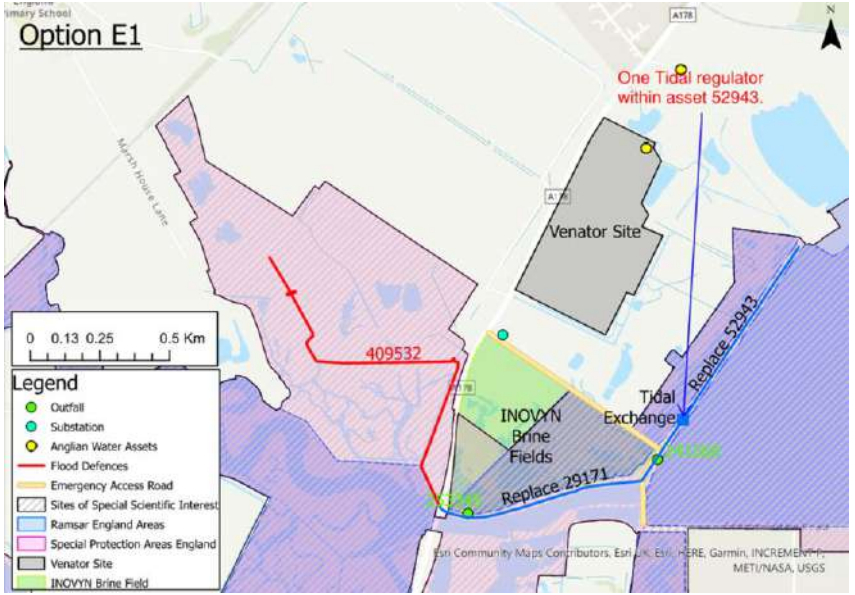
# Greatham North East Flood Alleviation Scheme



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# DEFRA Biodiversity Metric – Jan 2022

278954 12 January 2022

| | | |
|---|---|---|
| On-site baseline | *Habitat units* | 1496.42 |
| | *Hedgerow units* | 1.40 |
| | *River units* | 0.00 |
| On-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 1129.05 |
| | *Hedgerow units* | 1.40 |
| | *River units* | 0.00 |
| On-site net % change (Including habitat retention, creation & enhancement) | *Habitat units* | -24.55% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |
| Off-site baseline | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Off-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total net unit change (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | -367.37 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | -24.55% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |



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# Red line boundary

-24% on site net % change

+22% on site net % change

# Principle 6: expert ecological advice


| | Littoral mud | | | |
|---|---|---|---|---|
| | Creation | | Enhancement | |
| | Current | Proposed | Current | Proposed |
| Technical difficulty | 4 | 2 | 2 | 2 |
| Hydrological requirements | 2 | 1 | 2 | 1 |
| Salinity regime | 2 | 1 | 2 | 1 |
| Elavation and aspect | 3 | 2 | 3 | 2 |
| Seed source or biological material requirements | 1 | 1 | 1 | 1 |
| Trophic status conditions | 1 | 1 | 1 | 1 |
| Ongoing management requirements | 3 | 1 | 3 | 1 |
| Final score | **16** | **9** | **14** | **9** |
| Difficulty rating | High | Low | Medium | Low |



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# Project Specific Methodology

- 'difficulty to create' multiplier from high difficulty (0.33) to low difficulty (1)
- 'time to create' multiplier was changed from 15 years to 10 years
- values more closely aligned with the actual time to create seen on site
- Strategic significance - LNRS
- % Change in Habitat Units +22.15%



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JBA consulting

# Greatham North and South Habitat Assessment

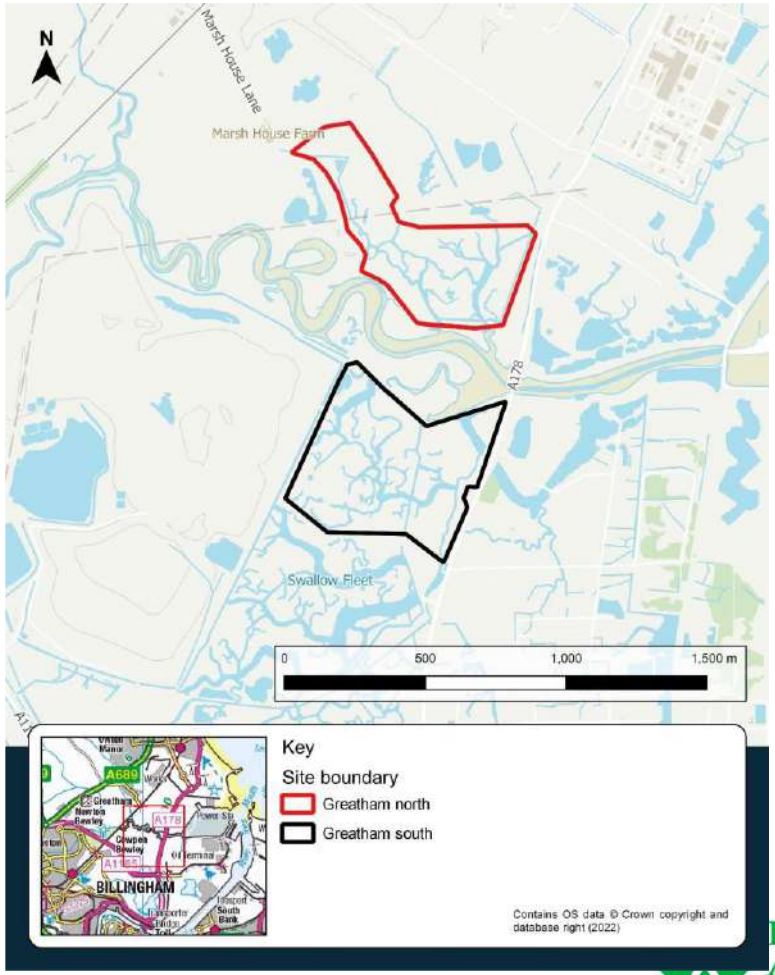
## Final Report

July 2023

Prepared for:
Environment Agency

Environment Agency

www.jbaconsulting.com

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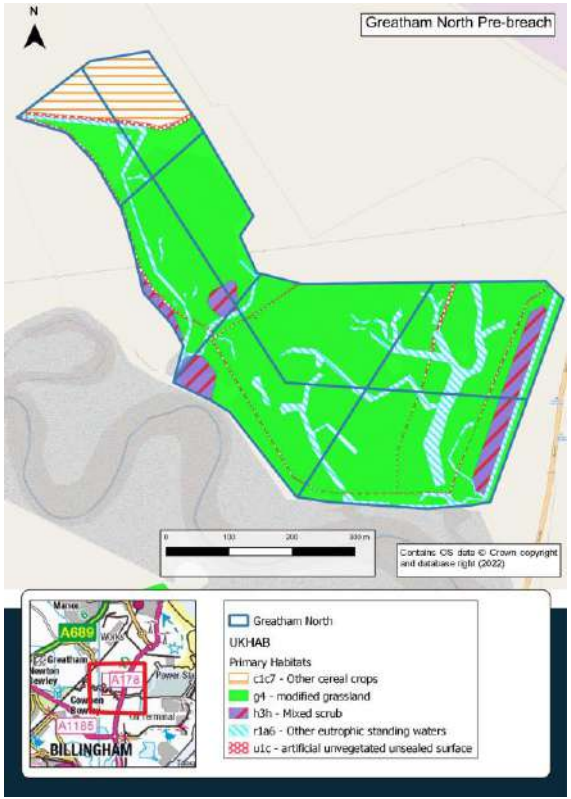
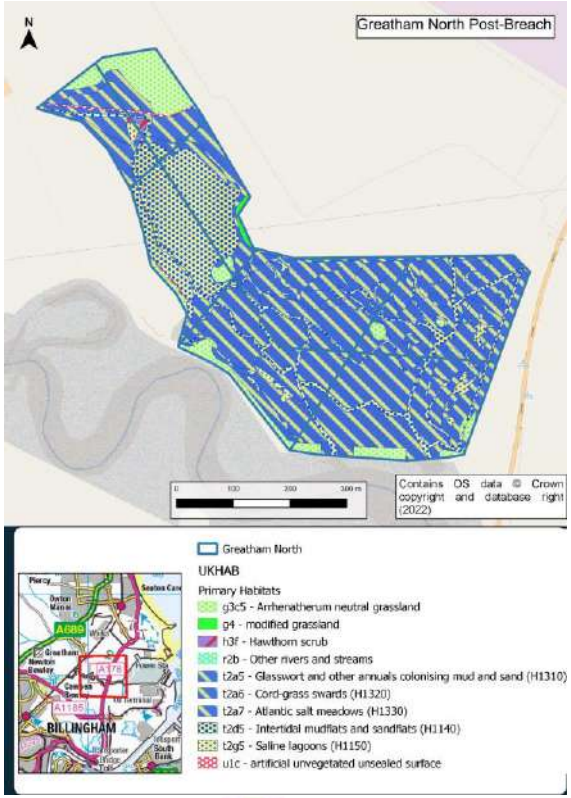
# Greatham North Habitat Assessment




Environment Agency

# Greatham South

| | | |
|---|---|---|
| On-site baseline | *Habitat units* | 324.67 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| On-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 195.64 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| On-site net % change (Including habitat retention, creation & enhancement) | *Habitat units* | -39.74% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |
| Off-site baseline | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Off-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total net unit change (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | -129.03 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | -39.74% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |
| Trading rules Satisfied? | No - Check Trading Summary ▲ | |

# Greatham North

| | | |
|---|---|---|
| On-site baseline | *Habitat units* | 94.07 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| On-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 116.66 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| On-site net % change (Including habitat retention, creation & enhancement) | *Habitat units* | 24.01% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |
| Off-site baseline | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Off-site post-intervention (Including habitat retention, creation & enhancement) | *Habitat units* | 0.00 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total net unit change (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | 22.59 |
| | *Hedgerow units* | 0.00 |
| | *River units* | 0.00 |
| Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement) | *Habitat units* | 24.01% |
| | *Hedgerow units* | 0.00% |
| | *River units* | 0.00% |
| Trading rules Satisfied? | No - Check Trading Summary ▲ | |



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# Application of Principle 6

- Greatham South
- net gain of 7.9%

- Greatham North
- net gain of 167.76%.



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# Conclusion

- The current metric is not designed to deal with the complexities of habitat creation schemes
- The metric favours retention and enhancement of habitats, rather than loss and re-creation
- Alternative version of the metric to use on habitat creation schemes, as opposed to developments
- Biodiversity Net Gain  currently a TopX risk for most projects delivering coastal restoration on Environment Agency North East capital programme
- Role of ReMeMaRe to support coastal restoration practioneers navigate new policy and facilitate knowledge exchange



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# BARRIERS AND OPPORTUNITIES


## Adam Rowlands, RSPB


### East Coast Flyway – Tentative UNESCO Natural World Heritage Site

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# East Coast Flyway (Humber to the Thames)

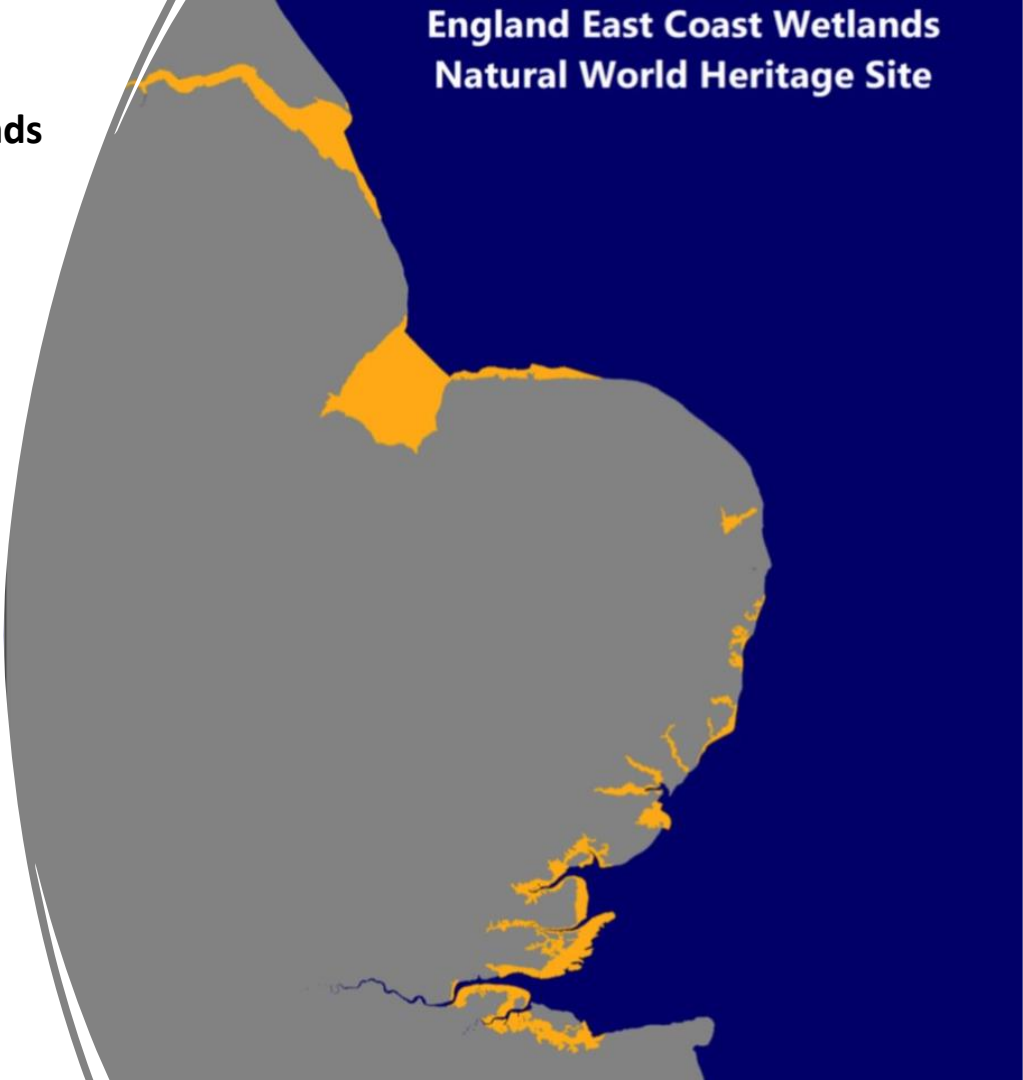
**Potential Natural World Her**

unesco

## East Atlantic Flyway : England East Coast Wetlands (Humber-Thames)

- Added to the UK Tentative List of Potential World Heritage Sites (April 2023)
- Shortened name

  “East Coast Flyway”



# What is UNESCO?

UNITED Nations, Educational, Scientific and Cultural Organisation

Established in 1945

195 Members

HQ in Paris

Works to create the conditions for dialogue to achieve sustainable development, encompassing observance of human rights, mutual respect

unesco

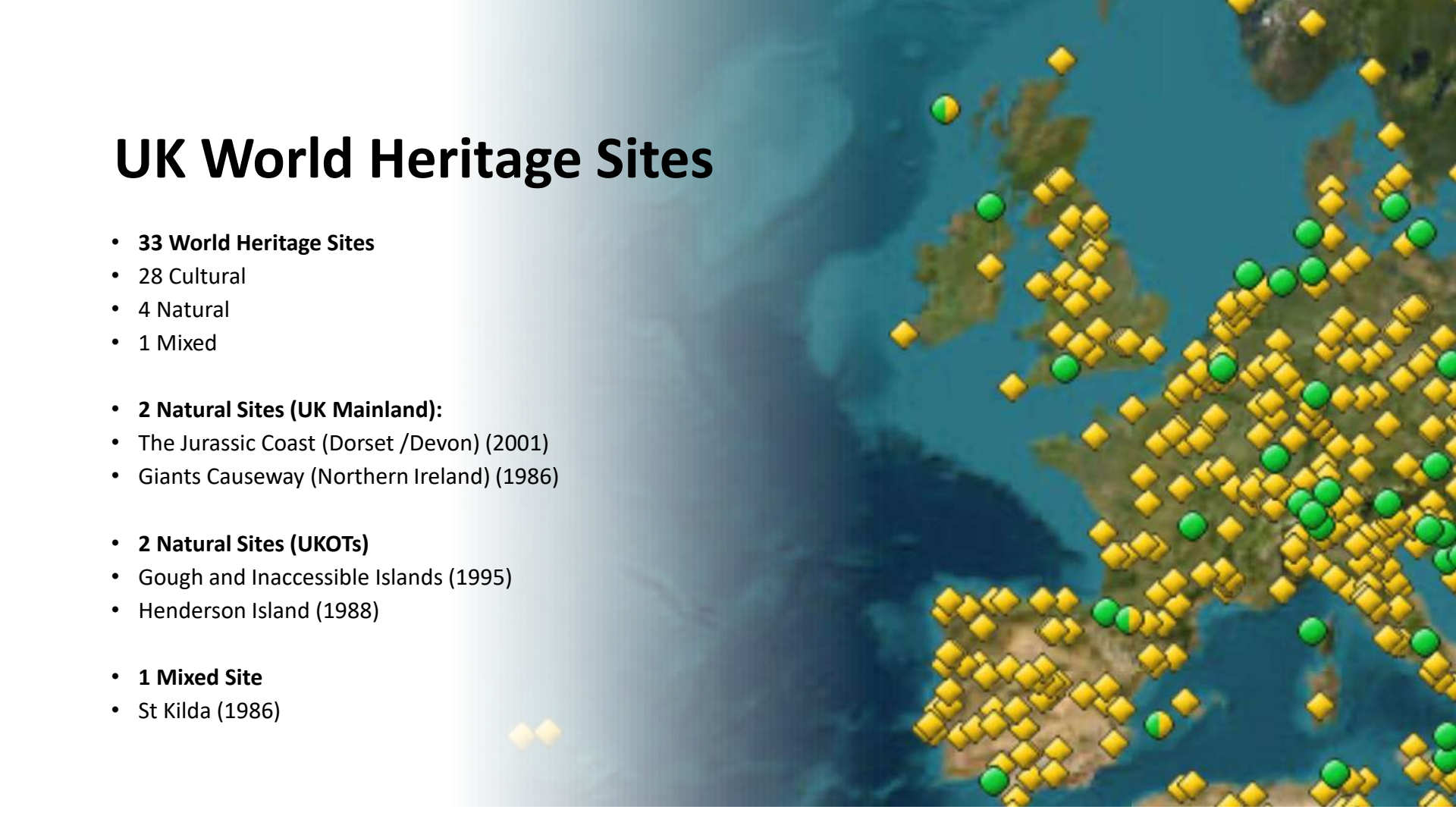
# UK World Heritage Sites

- **33 World Heritage Sites**
- 28 Cultural
- 4 Natural
- 1 Mixed

- **2 Natural Sites (UK Mainland):**
- The Jurassic Coast (Dorset /Devon) (2001)
- Giants Causeway (Northern Ireland) (1986)

- **2 Natural Sites (UKOTs)**
- Gough and Inaccessible Islands (1995)
- Henderson Island (1988)

- **1 Mixed Site**
- St Kilda (1986)



# What makes a Natural World Heritage Site?

**Nature’s most precious gifts to humanity**

Natural World Heritage sites contain some of the Earth’s most valuable natural areas recognised as being of Outstanding Universal Value (OUV) to humanity for their global significance to nature conservation.

# UNESCO World Heritage Site Criteria

## Cultural

**(i)**

to represent a masterpiece of human creative genius;

**(ii)**

to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;

**(iii)**

to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

**(iv)**

to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;

**(v)**

to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

**(vi)**

to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);

## Natural

**(vii)**

to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

**(viii)**

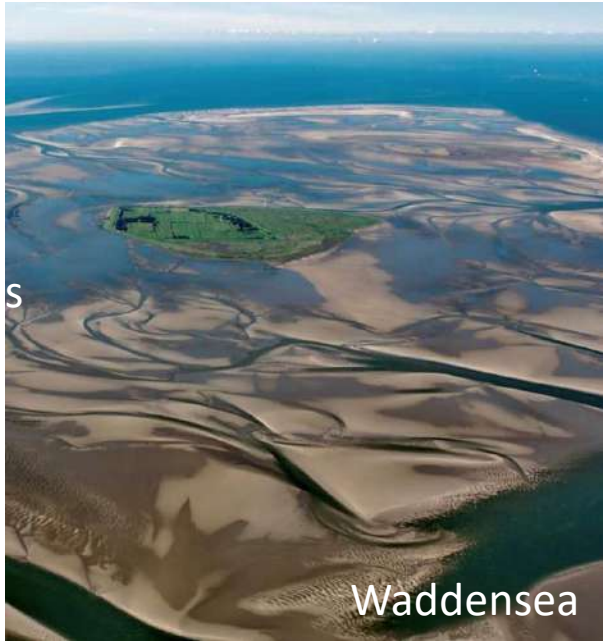
to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

**(ix)**

to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

**(x)**

to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.






# Global Examples of Natural World Heritage Sites

# World Heritage Site Tentative List?

- A Tentative List is an inventory of those properties which each State Party intends to consider for nomination
- State Parties are encouraged to submit their Tentative Lists of properties considered to be of Outstanding Universal Value and therefore suitable for inscription on the WHS list
- S[redacted]mine [redacted]st every 10 years

# UNESCO World Heritage Sites -UK Tentative List Review

Department for Culture Media & Sport

Managed by the Department of Culture, Media and Sport (DCMS)

Consultation ran 9 March – 15 July 2022

Including workshops and expressions of interest prior to preparation and submission of applications

Reviewed by DCMS appointed Independent Expert Panel

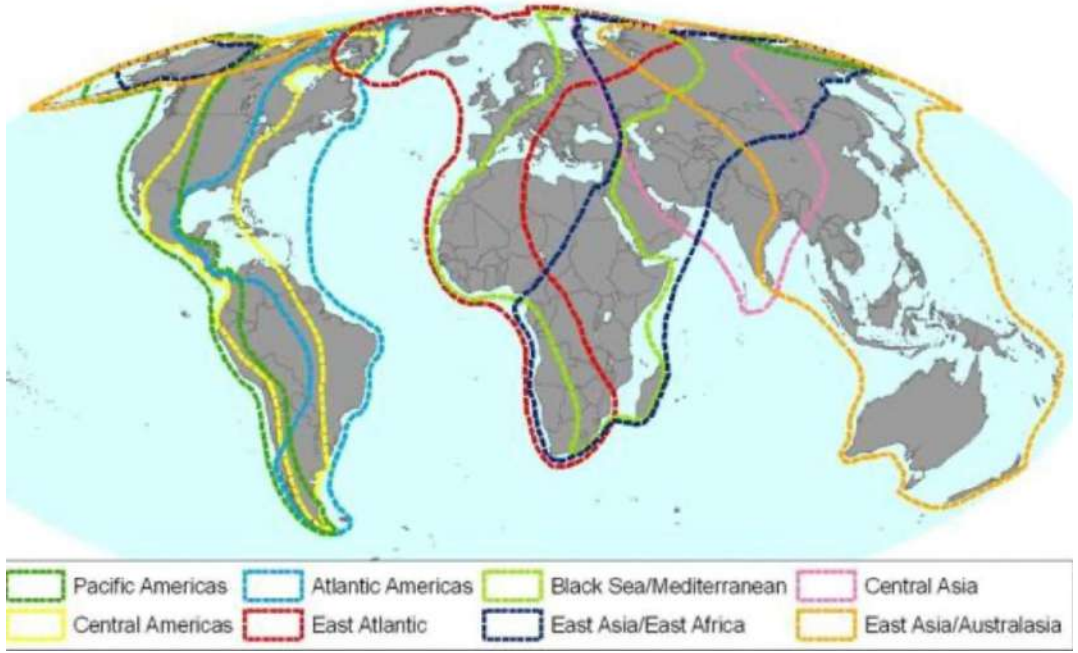
Recommended sites approved by Ministers

# Why the East Coast Flyway?

- What is a Flyway, where are they, what makes them special?

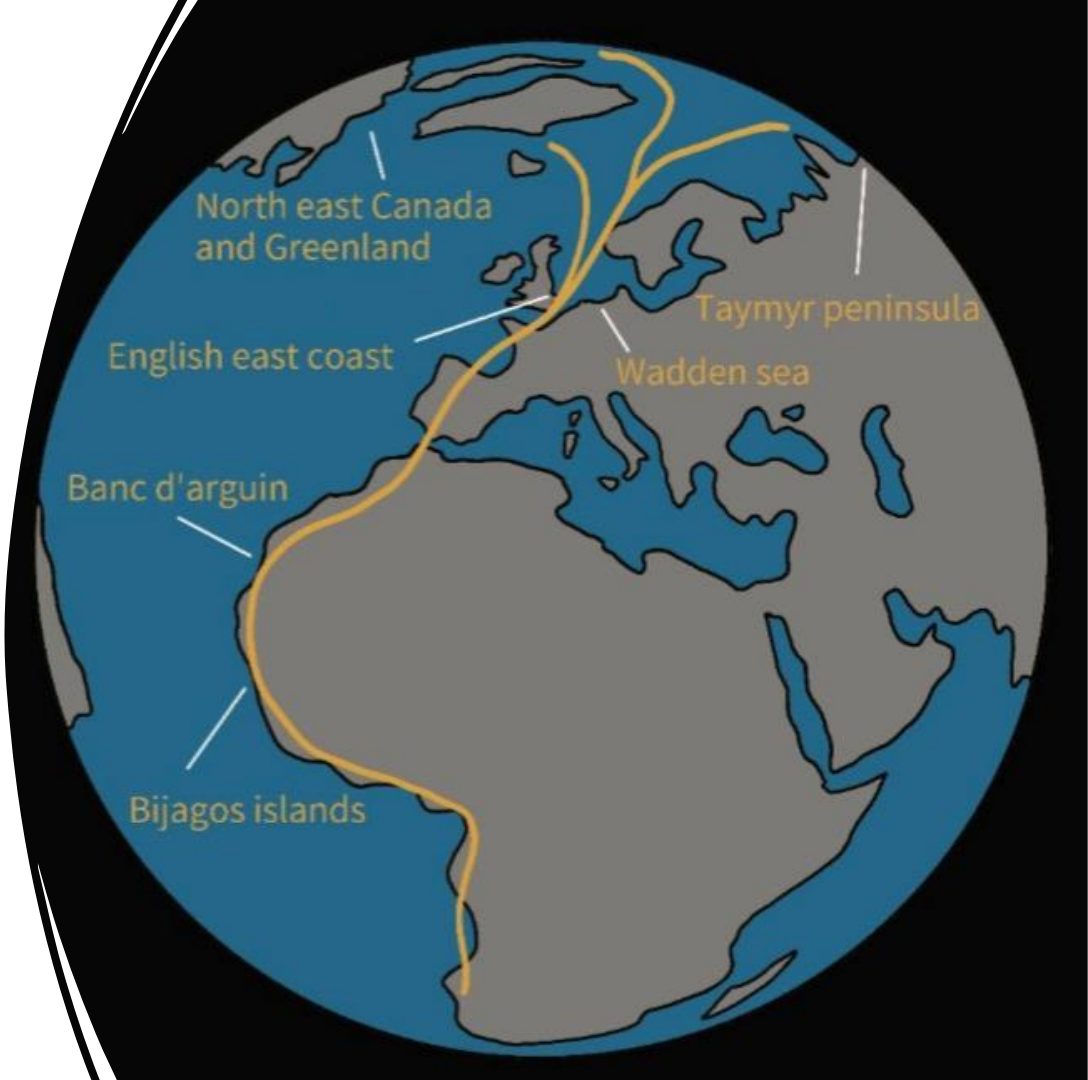
# Global Flyways

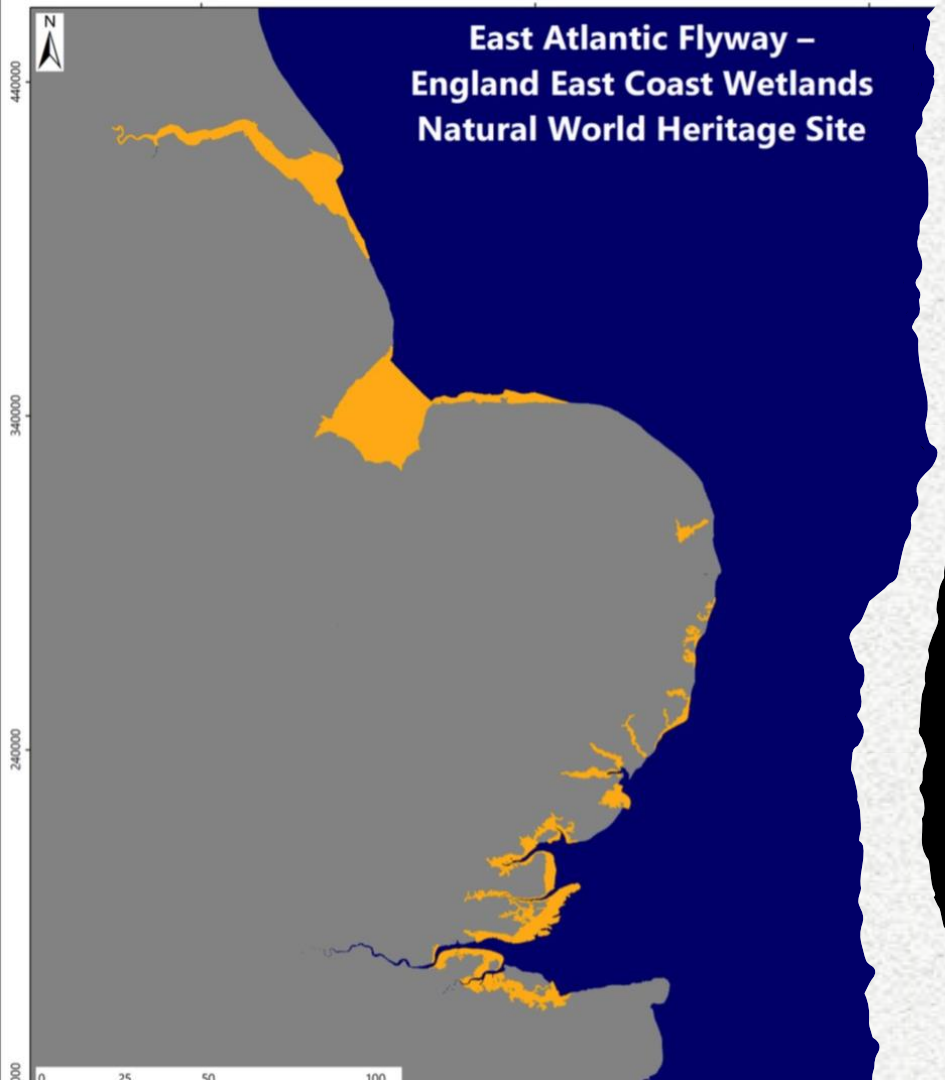
**‘Superhighways for migratory waterbirds’**



# East Atlantic Flyway

- One of eight global flyways
- Used by millions of waterbirds






# East Coast Flyway

- 21 Special Protection Areas (these include 21 Ramsar wetlands and 19 Special Areas of Conservation)
- Major Habitat Restorations (incl Freiston Shore, Wallasea Island)
- Ecologically interconnected and interdependent
- Humber to the Thames
- c.170,000 hectares
- Globally important Waterbird populations (29 species in internationally important numbers)
- World Class network of coastal wetlands
- Interdependencies with Waddensea and Banc d'Arguin NWHS
- UK is a global leader in coastal adaptation (including 23 managed realignment projects within this area)

# East Coast Flyway

- Application submitted in July 2022 (criterion x)
- Submitted by RSPB, National Trust and Wildfowl and Wetlands Trust with support from Lincolnshire, Norfolk, Suffolk, Essex and Kent County Councils, Coastal Partnership East, Babergh District Council and the Crown Estate.

# Tentative List
# UK Government Decision
## April 2023

- To add five new sites, and retain two existing sites making a new list of seven sites

- **UK Tentative List:**
- Birkenhead the People's Park [Cultural]
- **East Atlantic Flyway – England East Coast Wetlands [Natural]**
- The Flow Country [Natural]
- Gracehill Moravian Church Settlements [Cultural, Transnational]
- Little Cayman Marine Parks and Protected Areas [Natural]
- York [Cultural]
- The Zenith of Iron Age Shetland [Cultural]

# What does NWHS status mean in practice?

- Bringing people together regulators, stakeholders and communities with a common purpose
- Framework for collaborative working across 21 interconnected internationally important wetlands as part of a single globally important site
- Placing the Outstanding Universal Value at the heart of decision making
- Creating a lever for investment in people, eco-tourism and infrastructure

- More legal protection


# Benefits of being a Natural World Heritage Site

- Meeting UK commitment to International Agreements
- Public recognition – important accolade
- Conservation through awareness and valuing
- Greater access to funding
- Linking local communities to the role they play in:

- the management and protection of Outstanding Universal Value
- Issues of ecosystem sustainability and maintenance of biodiversity
- Coastal adaptation

# Next Steps

- Understanding the process
- Involving others from the outset
- Learning from elsewhere
- Building a nomination Team
- Developing Governance (Nomination Team and Nomination Board)
- Resourcing dossier development
- Declaration of Support

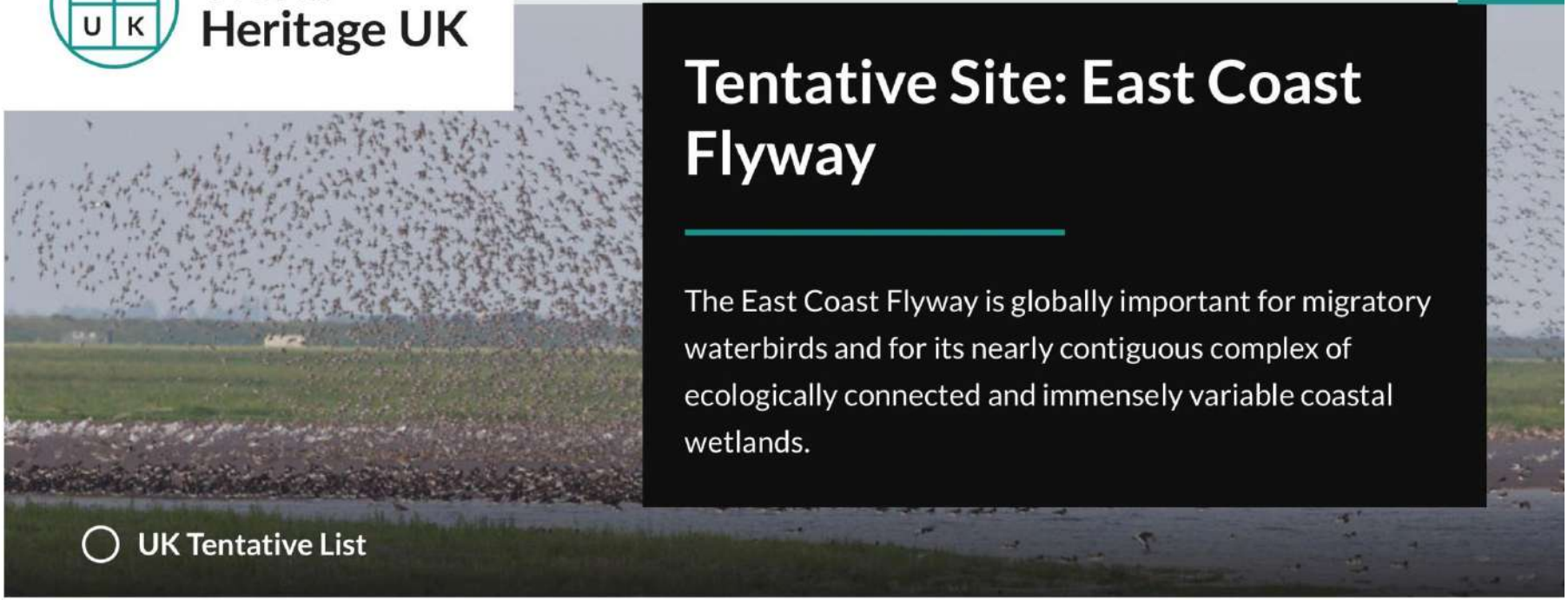
# Timescale

- A lengthy process
- 6 years minimum

World Heritage UK

# Tentative Site: East Coast Flyway

The East Coast Flyway is globally important for migratory waterbirds and for its nearly contiguous complex of ecologically connected and immensely variable coastal wetlands.



UK Tentative List

# ReMeMaRe Conference 2023

## *Barriers & Opportunities*

## *Session 5*

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# Q&A / Panel Debate

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# PANEL DEBATE

**Eve Leegwater, Environment Agency**
**Susanne Armstrong, ABPmer**
**Evonne Maxwell, Jacobs**
**Peter Barham MBE, Chair SUDG**
**Zahra Ravenscroft, Environment Agency**
**Adam Rowlands, RSPB**

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