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Climate & Sustainability

Use Case |
Nature-Based Solutions &
innovation



Digital Twin and Saltmarsh Restoration

Applying innovation and nature-based solutions for climate and carbon benefits

Project scope

Deloitte Climate & Sustainability has supported the Client in the feasibility study of a very **large-scale Salt Marsh restoration/creation projects in the UK**.

A **Digital Twin** of the coastal area was developed to assess **restoration feasibility**, refine carbon estimates using site-specific data, model environmental dynamics, and simulate scenarios with potential for carbon credit generation. This innovative approach **aligns nature and climate goals**, enabling **environmental and financial benefits** through nature-based solutions.

Deliverables

- A** Digital Twin of the site for predictive scenario modelling
- B** Feasibility Study for restoration and carbon potential
- C** Defined site boundary with a proposed 12 km flood embankment
- D** Restoration design to maximize 1,800 ha of intertidal habitat
- E** Investor engagement for certification and carbon market entry

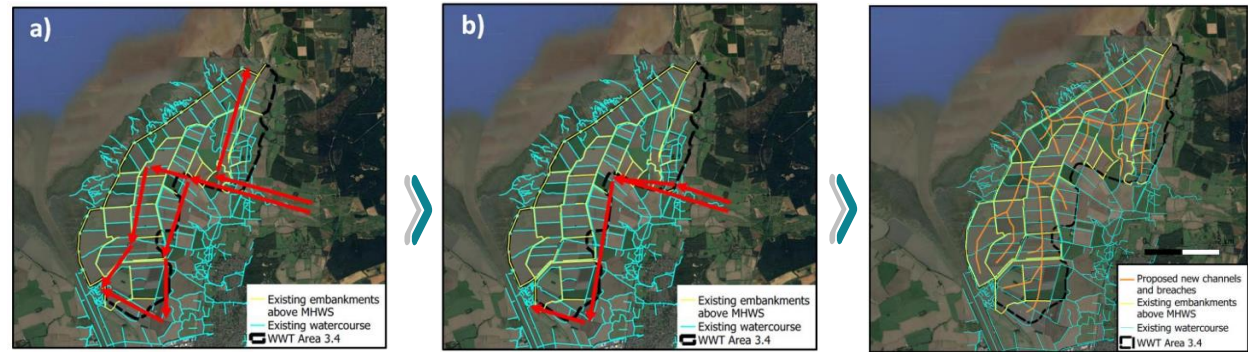
Main Activities

Phase 1 - Digital Twin and Site Analysis

- Creation of **3,200 ha of saltmarsh** in the Wash area (East Coast of England), refining literature-based carbon estimates (**18 tCO₂e/ha**) with site-specific data
- Simulation-based proof of concept for site-specific carbon prediction
- Proposed site boundary includes a **12 km inland flood embankment** (£39.3M estimated cost)
- Restoration of **~1,800 ha of intertidal habitat**, maximizing saltmarsh coverage while avoiding infrastructure and high-biodiversity zones

Phase 2 – Carbon Certification and Market Entry

- Investor funding certification of the methodology
- Aiming for validation under the **Verra standard**
- Enables **carbon credit generation and sale** in the voluntary market



Year	5	10	15	20	25	30
Mean carbon accumulated (tCO ₂ e)	7133	14,196	21,189	28,106	34,945	41,707

Carbon in predicted sediment volume



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