

The relevance of International Case Studies in Coastal Habitat Restoration in Osaka Bay

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Context

- Global historic land claim from tidal flats and saltmarshes
- Increasing recognition of the value of flyways for migratory wetland birds



The Ending of Large Scale Land Claim

- Last land claim for agriculture in the UK in 1983 – after 2000 years of intertidal land claim
- Large scale land claim on the Yellow Sea (China/South Korea) stopped around 2015



Legal Protections for Tidal Flats and Migratory Birds

Europe

- .Wild Birds Directive (1979, 2009)
- .Habitats Directive (1992)

UK

- .UK Habitats Regulations (2017)

South Korea

- .Sustainable Management and
Restoration of Tidal Flats Act (2019)



Reasons to restore coastal habitats



- **Nature Conservation Perspective**
- Making good on historic losses to recover previous benefits
- Maintain current functional value in the face of sea level rise and other climate change driven impacts through well planned coastal adaptation
- Legal obligations
- **Wider society benefits from Nature Based Solutions**
- Reducing flood risk
- Using saltmarsh as part of more sustainable flood protection
- Maintaining fisheries
- Capturing and storing carbon
- Bring people closer to nature
- ...and more

Planning and Delivery of Coastal Habitat Restoration : UK(RSPB) Experience

- What, Where? and How?
- Being clear on what is needed (more functioning habitat for priority bird populations) with an open mind on how it will be achieved
- Recognising that coastal restoration work can be complex, technically challenging and relatively high cost



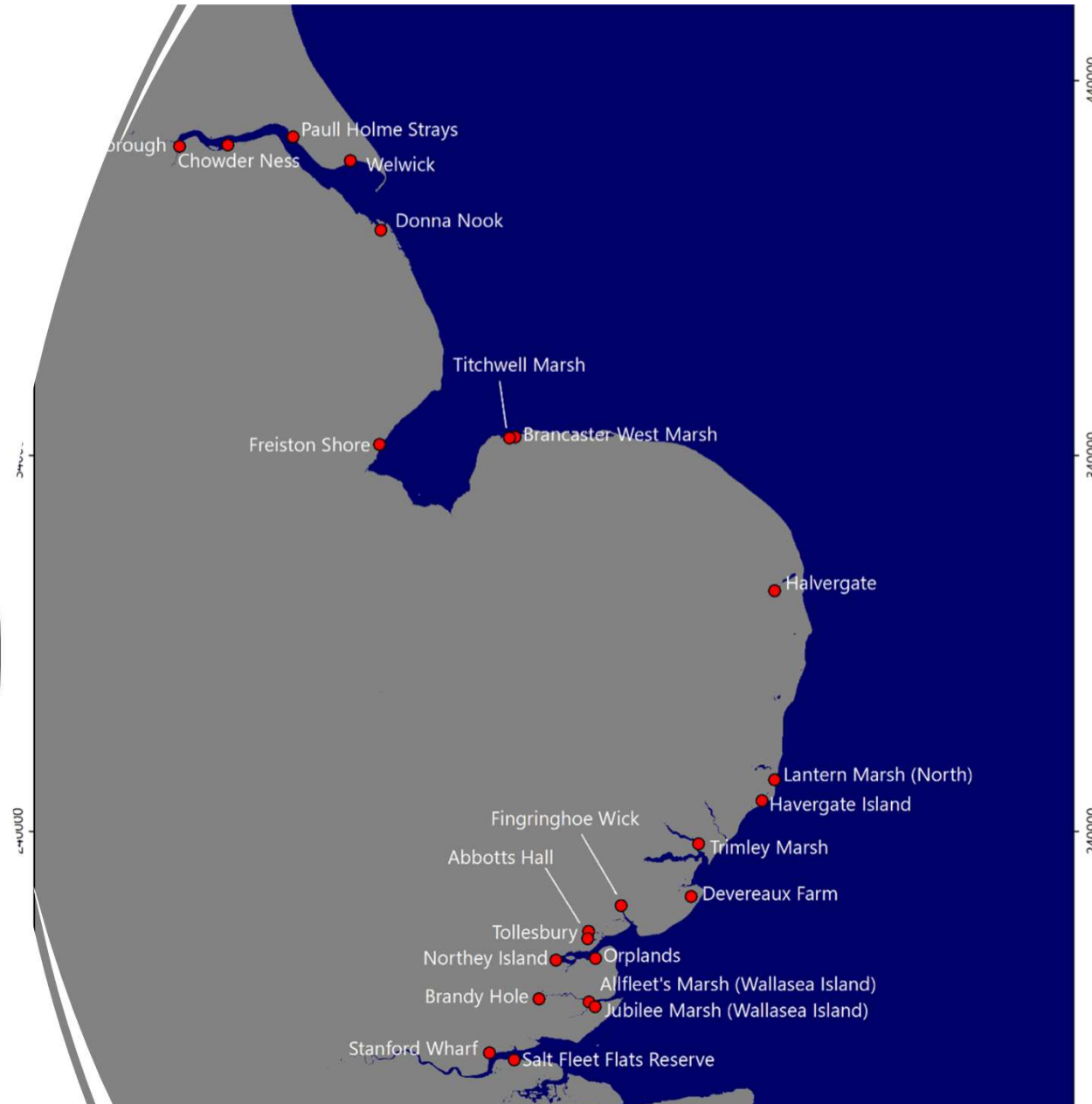
Coastal Habitat Restoration in Eastern England UK

- A new area of work and importance of recognising what you don't know
- Monitoring to help with learning of what works and produce even better future projects
- Involving experts and learning from practitioners elsewhere
- Two main techniques:
 - Managed Realignment
 - Regulated Tidal Exchange



Managed Realignment

- Possible if there is a need/opportunity to change sea defences with suitable low lying land behind existing defences – through changing the defence line and allowing tidal flooding on previously protected land
- Public acceptance is more likely where there are a combination of public benefits including nature



Managed Realignment

- Involves breaching seawalls and allowing the sea to do the rest
- Needing hydrodynamic modelling, engineering and topography assessment to inform design
- Often benefits from pre-breach landforming and excavation to ensure creation of priority habitats and drainage



Regulated Tidal Exchange (RTE)

- Managed use of sea water to create new saline habitats
- More complex than managed realignment
- Designs need to take account of salinity (and avoidance of hypersalinity – unless desired), tide heights and tidal cycle. Size and operation of watergates and vegetation management
- A very good example of a well designed and operated RTE is at the Nanko Bird Sanctuary



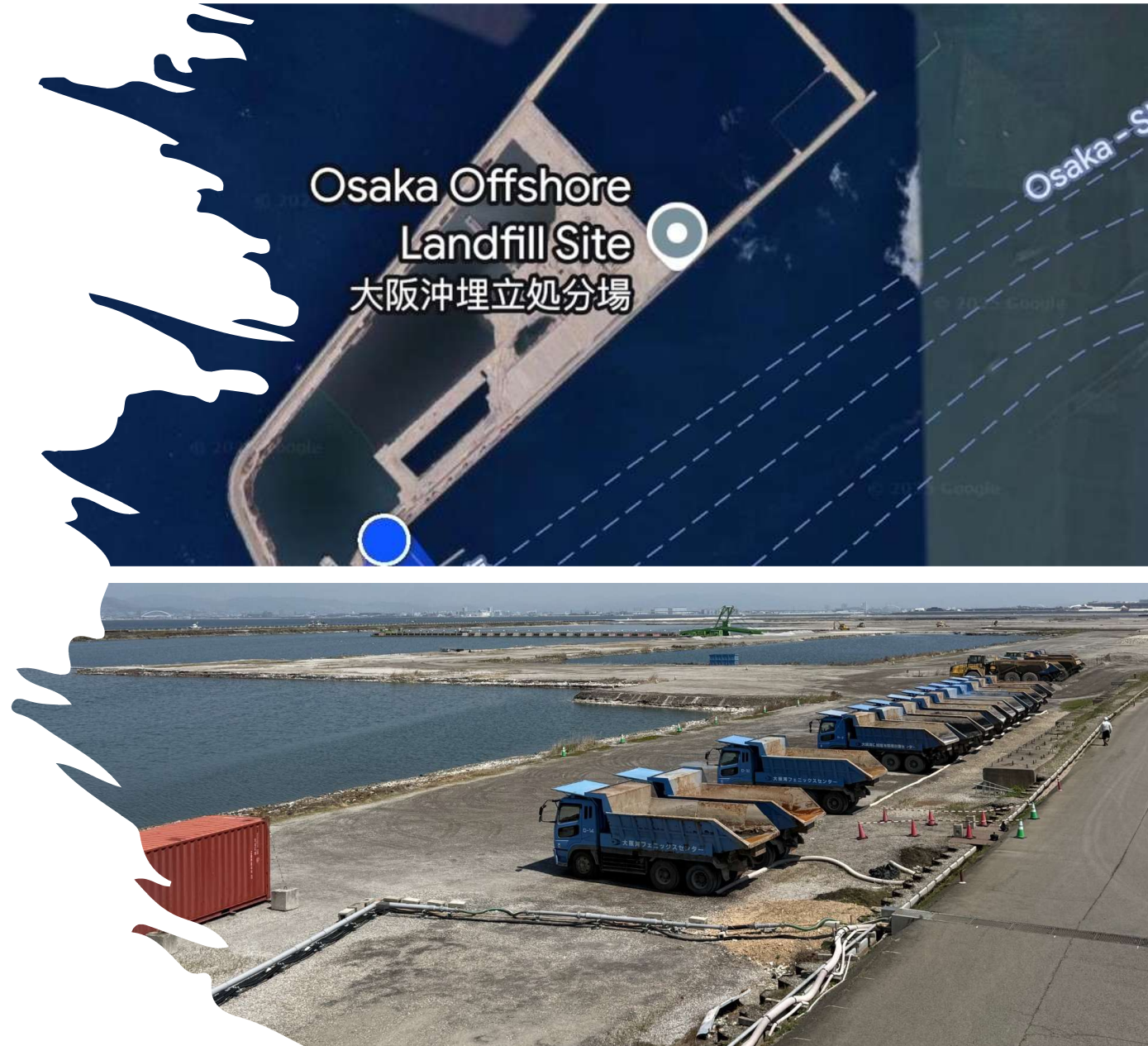
Regulated Tidal Exchange Development in the UK – Learning from others

- RSPB recognising it as a technique (c1998)
- Site visits to review projects and meet practitioners :
- Delaware/Connecticut (USA) – use of self regulating tidegates
- Beltringharder Koog (Germany) – use of a large water gate with sea water input at 5 cubic metres/second
- Mai Po (Hong Kong) – using seawater to grow food for birds
- Veta La Palma (Donana, Spain – 3200ha fish farm, large scale RTE and water distribution using the ecosystem to grow fish and attracting large populations of wetland birds



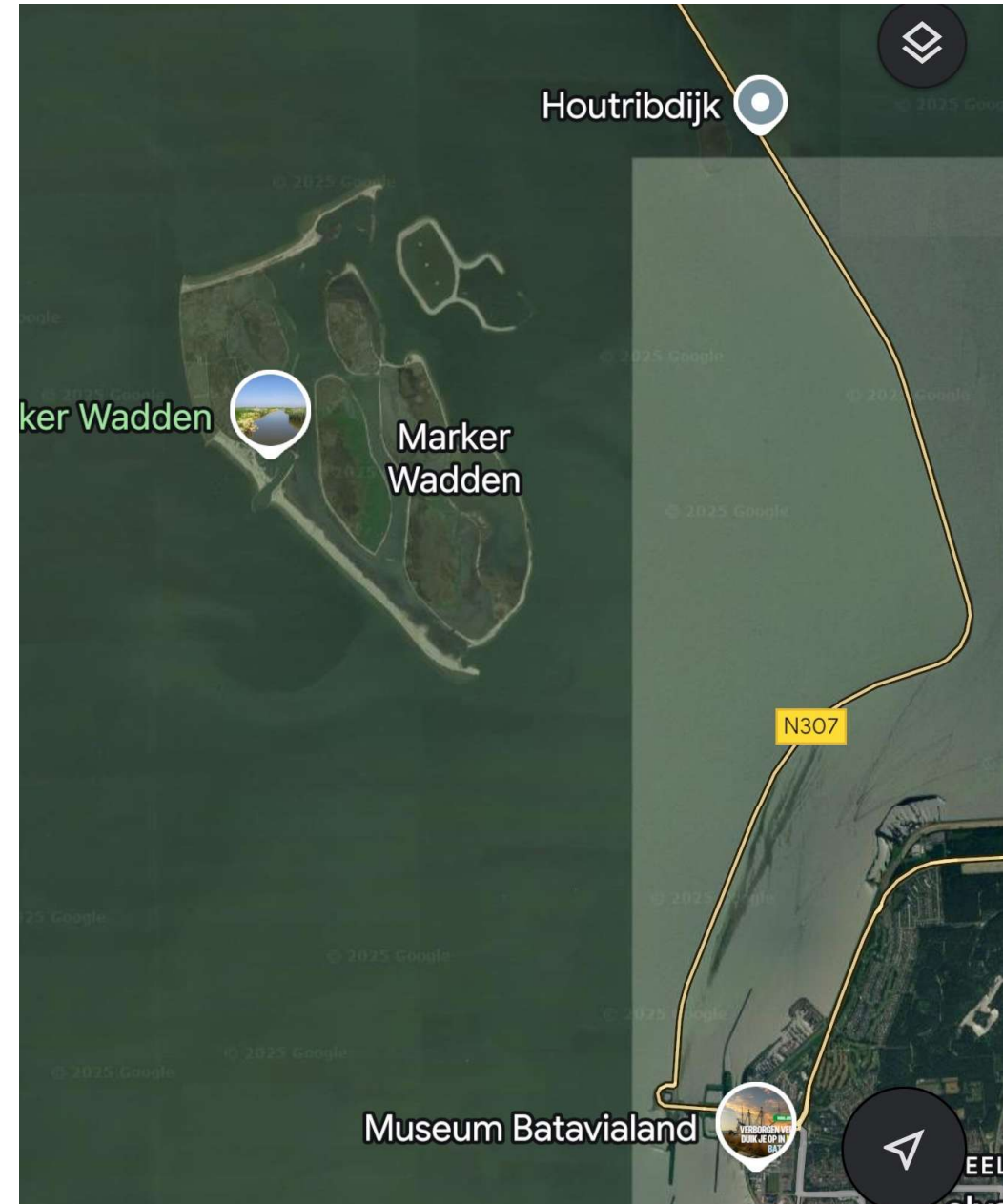
Observations in Osaka Bay

- Almost entire loss of former tidal flats due to land claim followed by built development
- Important location on the East Asia-Australasian Flyway with all available habitat readily used by priority species
- Currently used sites are often on former (example Nanko Bird Sanctuary) or active landfill sites (examples New Island and Senboku 6th ward)



Osaka Bay Restoration Challenges

- Recognition of the need and opportunity to restore on a larger scale, retaining wetlands following fill with appropriate long term management – as at Nanko Bird Sanctuary but on a bigger scale
- Developing the techniques to build new wetlands from the sub-tidal to bring new land up to tide height. Example Marker Wadden (Netherlands)



Creating a wetland landform with imported materials

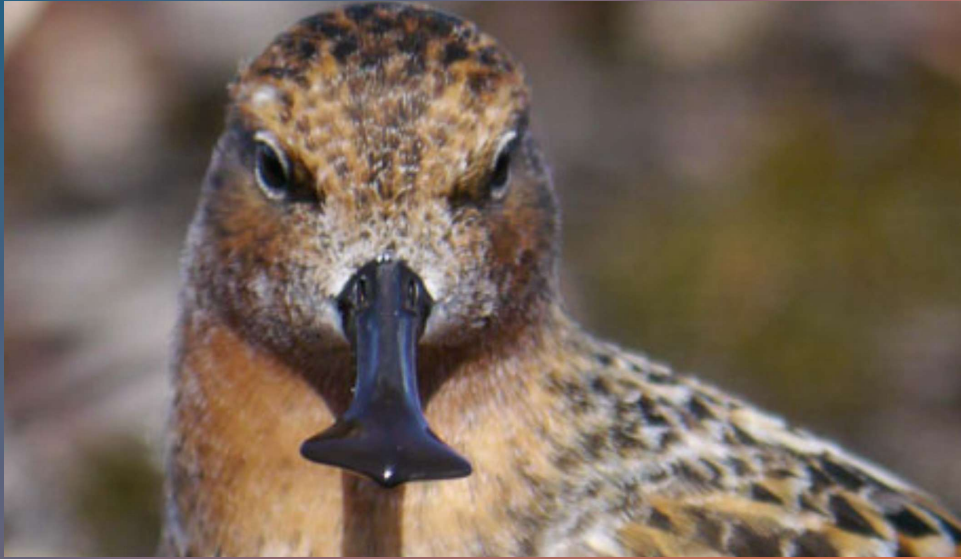
- At Wallasea Island (UK) 165ha of low lying formerly land claimed farmland below Mean High Water height was land raised and landformed prior to introduction of sea water by sea wall breaching.
- 3 Million tonnes of excavated material from a new London railway were brought to site by ship, unloaded and placed to an ecologically focussed design.



Possible methods In Osaka Bay through adapting land fill practice

- During my April visit I observed landfill practice has created a succession of new islands using a variety of waste materials including incinerator waste
- The filling appeared to follow the enclosure of sub tidal areas followed by land raising from the seabed, a part completed site was visited at Hannan 2nd ward





In conclusion

- Planned Coastal Habitat Restoration is relatively new and there is much to be gained through international sharing of knowledge between experts and practitioners.
- Experience elsewhere especially at the Marker Wadden and Wallasea Island demonstrates the technical feasibility of building large new areas for nature using suitable imported fill material
- Such a site created in Osaka Bay would be of international significance for migratory birds, Wallasea Island for example is under consideration as part of a Natural World World Heritage Site and the Marker Wadden has been included within a new National Park

Thank You

