

**Case Study: Beneficial Use of Sediments**

<i>Project</i>	<i>Trial of new saltmarsh restoration drag box at West Itchenor</i>
<u>Classification code</u>	R4B_2023_UK
Major function	Restoration: R4
Other functions	Resiliency R5
Major technique	In Water Reallocation at final location : B
Other technique	Novel Drag Box Technique
Location	Chichester Harbour
Volume	1,500 m3
Contaminants	OSPAR approved for marine disposal and reuse
Granulometry	Silt
Scale	0.25 ha at Stage 1 (phased approach starting small and planning to scale up)
Client	Land and Water Services Ltd and partners under Solent Seascape projects
Executor	Land and Water Services Ltd
Research program	Solent Seascape, ChaPRoN, Land & Water Services and ABPmer research trial (investigating the applicability of the technique itself and also the value of marshes for nutrient removal all under the Solent Seascape initiative)
Contact name	<i>Colin Scott, ABPmer</i>
Contact e-mail	<a href="mailto:crscott@abpmer.co.uk">crscott@abpmer.co.uk</a>
Year start - end	<i>2023 ongoing</i>

## Description of the project

This project was undertaken to restore an area of deteriorated saltmarsh in Chichester harbour. It was also carried out to test a new way of beneficially using dredge sediment developed by Land and Water Services Ltd. The new technique involved firstly depositing sediment on the low shore directly from a spilt hopper barge and then immediately starting to move it up to the saltmarsh zone at the top of the shore using a new 'drag box'.

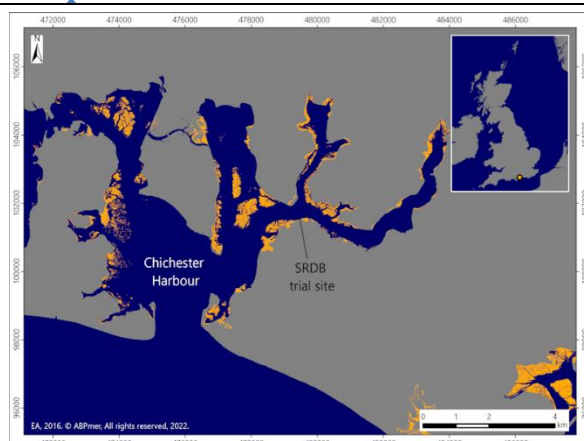
This new 'saltmarsh restraion drag box' (SRDB) was designed, built and implemented by Land and Water Services Ltd. This drag box approach introduces a novel and potentially very valuable way of using relatively consolidated dredged sediment for saltmarsh habitat restoration. Its value lies in the fact that it can place dredge sediment directly onto marsh levels and keep it there without the need for introducing retaining fences and without affecting the productivity (turnaround and cost) of the dredging operations.

This project was part of the Solent Seascape Project and was supported and informed by several partners including the Chichester Harbour Conservancy and CHaPRoN (see link below). This work is being pursued through adaptive management to build confidence in the approach. An initial trial was undertaken in February 2023. Monitoring is being undertaken at this site by ABPmer to understand how the area performs physically and ecologically.

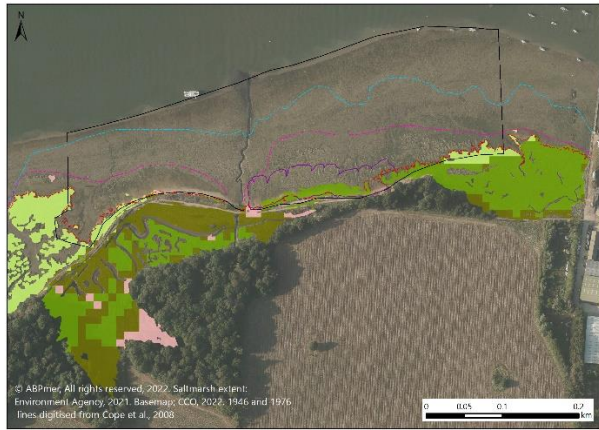
Over the course of first year the findings were very encouraging. The imported sediment was poorly consolidated when it was first moved but it stabilised and compacted quickly. It then remained where it was placed throughout the year. Some Samphire plants were starting to grow over the newly placed sediment during the first summer.

As part of this project, extra research is being conducted at this site (by Earth Change, the UK Centre for Ecology and Hydrology (UKCEH) and Bangor University) to measure the nitrate absorption of saltmarsh as part of a wider nutrient neutrality programme being undertaken. The lessons learned will continue be captured and shared to understand how widely this approach can be applied.

## Graphical information

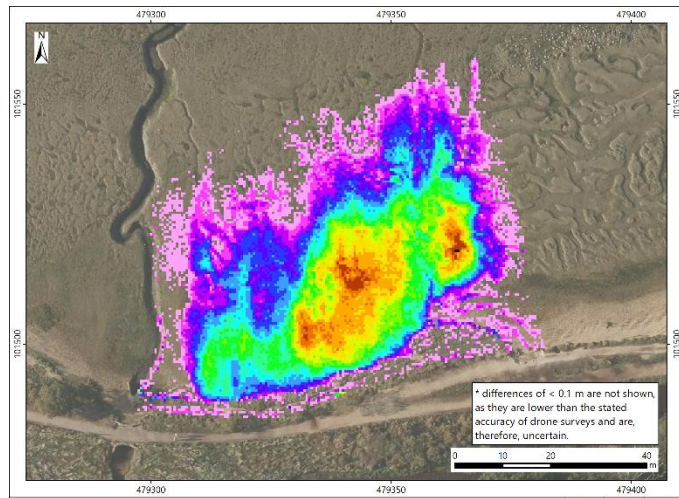


*Location of SRDB drag box trial in Chichester Harbour (map also shows current saltmarsh extent in orange)*



<ul style="list-style-type: none"> <li>Deposit and restoration zone</li> <li>2023 saltmarsh trial area</li> <li>2016 saltmarsh extent and zones</li> <li>other / not classified</li> </ul>	<ul style="list-style-type: none"> <li>Spartina</li> <li>Pioneer</li> <li>Mid-Low</li> <li>Upper Marsh</li> </ul>	<ul style="list-style-type: none"> <li>2022 saltmarsh edge (July survey)</li> <li>1971 saltmarsh edge (approx.; SDCP)</li> <li>1946 saltmarsh edge (approx.; SDCP)</li> </ul>	<table border="1"> <tr> <th>Date</th> <th>By</th> <th>QA</th> </tr> <tr> <td>Sep23</td> <td>SRA</td> <td>CRO</td> </tr> <tr> <td colspan="3">Coordinate System</td> </tr> <tr> <td colspan="3">British National Grid</td> </tr> <tr> <td colspan="3">Projection</td> </tr> <tr> <td colspan="3">Transverse Mercator</td> </tr> <tr> <td colspan="3">Project no. 5140</td> </tr> <tr> <td colspan="3">Fig. saltmarsh.mxd</td> </tr> </table>	Date	By	QA	Sep23	SRA	CRO	Coordinate System			British National Grid			Projection			Transverse Mercator			Project no. 5140			Fig. saltmarsh.mxd		
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Historic areas of marsh loss at the restoration site © ABPmer



<p>Depth of sediment added (m) *</p> <ul style="list-style-type: none"> <li>&lt;0.1</li> <li>0.1 to 0.15</li> <li>0.16 to 0.2</li> <li>0.21 to 0.25</li> <li>0.26 to 0.3</li> <li>0.31 to 0.35</li> <li>0.36 to 0.4</li> <li>0.41 to 0.45</li> <li>0.46 to 0.5</li> <li>0.51 to 0.55</li> <li>0.56 to 0.6</li> <li>0.61 to 0.65</li> <li>0.66 to 0.7</li> <li>0.71 to 0.75</li> <li>0.76 to 0.8</li> <li>0.81 to 0.85</li> <li>0.86 to 0.9</li> </ul>	<table border="1"> <tr> <th>Date</th> <th>By</th> <th>QA</th> </tr> <tr> <td>Sep23</td> <td>SRA</td> <td>CRO</td> </tr> <tr> <td colspan="3">Coordinate System</td> </tr> <tr> <td colspan="3">British National Grid</td> </tr> <tr> <td colspan="3">Projection</td> </tr> <tr> <td colspan="3">Transverse Mercator</td> </tr> <tr> <td colspan="3">Project no. 5140</td> </tr> <tr> <td colspan="3">Fig. DepthSed_Mar23_v2.mxd</td> </tr> </table>	Date	By	QA	Sep23	SRA	CRO	Coordinate System			British National Grid			Projection			Transverse Mercator			Project no. 5140			Fig. DepthSed_Mar23_v2.mxd		
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Area of raised and restored habitats after Phase 1 © ABPmer



Drag box being trialed at West Itchenor in February 2023 (c) Land & Water Services Ltd

## References/web links

[Graphic information + references *cannot* go beyond page 2. Use Calibri 11, 1.0 spacing for references.]

1. <https://www.omreg.net/query-database/0033-west-itchenor/>
2. <https://www.conservancy.co.uk/nature-recovery-chapron/projects/saltmarsh-restoration-trial-project-west-itchenor/>