

## Case Study Beneficial Use of Sediments

<b>Project</b>	<i>Lymington Intertidal Habitat Restoration</i>
Classification	R4B_2016_UK
Major Funtion	<i>Restoration</i>
Other Funtion	<i>Resiliency</i>
Location	<i>Lymington Estuary, Hampshire, UK</i>
Volume	<i>24,000 m<sup>3</sup> (silt) over three projects and seven campaigns</i>
Technique	<i>Different techniques over three different projects (see main text)</i>
Contaminants	<i>No/Low contamination</i>
Granulometry	<i>Silt/mud some clay from maintenance dredging work</i>
Scale	<i>Full scale (approx. 3 hectares but protecting larger marsh)</i>
Client	<i>Lymington Harbour Commission and Wightlink Ltd.</i>
Executor	<i>Various including Contractors Land and Water Ltd and WillowBank Services as well as Consultants ABPmer, Marine Space and Black and Veatch</i>
Research program	<i>First LHC Campaign supported by The Crown Estate</i>
Contact	<i>Colin Scott, ABPmer, <a href="mailto:cscott@abpmer.co.uk">cscott@abpmer.co.uk</a>, +44 2380711860</i>
Year start-end	<i>2012 – 2016 (also ongoing until 2024)</i>

### Description of the project

Between 2012 and 2016, several beneficial use projects were carried out to protect/restore eroding marshes at the mouth of Lymington Estuary (UK). The exposed seaward edges of these marshes have been retreating since the middle of the 20<sup>th</sup> Century and they are also deteriorating internally due to 'die-back'<sup>1</sup>. These marshes play an important role in shielding Lymington's marinas, moorings and sea defences from wave attack. Approximately 30,000 m<sup>3</sup> of maintenance dredgings are taken from the harbour's marinas and the navigation channel each winter. In the past, all this sediment was taken out of the estuary to a disposal site. In recent years though, a proportion has been placed on top of, or near to, the marshes to help slow their decline. This work has been led by Lymington Harbour Commission (LHC) and Wightlink Ltd with three different projects having been undertaken:

- 1<sup>st</sup> LHC Campaign (2012 and 2013): 3,125 m<sup>3</sup> of sediment were pumped directly from a marina to an adjacent marsh using a cutter suction dredger. This was carried out to offset impacts on intertidal habitats from the construction of rock-armour breakwaters protecting the harbour entrance;
- Wightlink Ltd Campaign (2012 and 2013): 4,500 m<sup>3</sup> of sediment were back-hoed into barge for transfer to the site and then 'cutter suctioned' to a decaying marsh. This was done to offset any impacts to intertidal habitat from the operation of a ferry service; and
- 2<sup>nd</sup> LHC Campaign (2014 to 2016): 16,781 m<sup>3</sup> of sediment was back-hoed into a barge and 'bottom deposited' to a lower intertidal area fronting the eroding marshes. The new licence issued in 2017 now authorises placement of up to 10,000 tonnes per year until 2024.

Monitoring of these projects has provided useful lessons about the technical aspects (e.g. sediment delivery and retention) and ecological value (e.g. plant growth) of such work. It has been valuable that different techniques were employed at one location as this allows direct comparisons to be made between approaches. In particular, it helps to understand the comparative costs which will help inform future projects (the fee details have been kindly shared by LHC and Wightlink Ltd.). The LHC has also, helpfully, further analysed the fees for different elements of the projects (consenting, monitoring and implementation) and compared them against the disposal at sea alternative.

<sup>1</sup> The exact cause of this has not been confirmed, but it is likely to be either exacerbated by, or driven by, sea level rise and increased tidal inundation as well as an insufficient sediment supply reducing the marshes' ability to cope with these factors.

## Graphical information

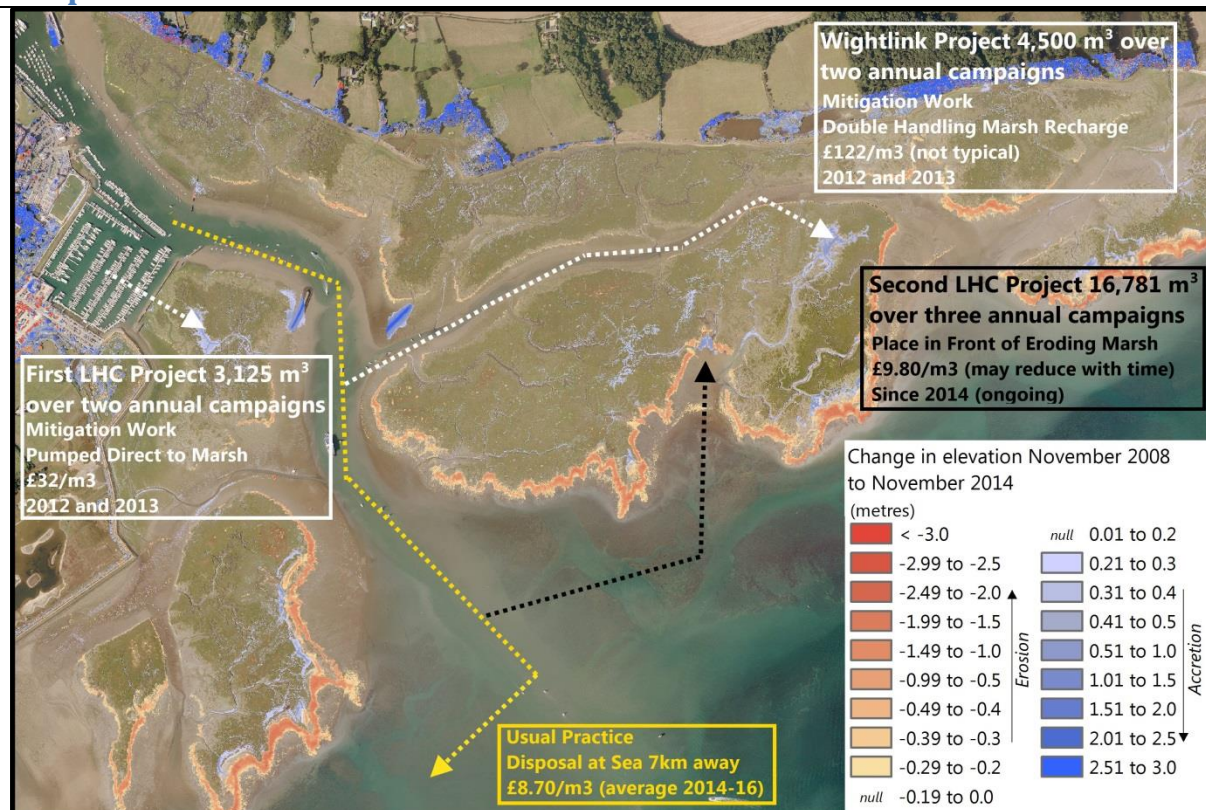


Figure 1. Summary of saltmarsh recharge projects at Lymington (from 2012 to 2017) (background map shows change in intertidal elevation based on differences in 2008 and 2014 LiDAR data (blue areas show raised levels from silt recharge (as well as other changes) while the red areas show reduced elevation over time and mainly illustrate the rate of marsh-edge erosion). Source ABPmer (2017) using Environment Agency LiDAR data from 1999 and 2015



Sources: ABPmer (left & centre Wightlink project 2012) and LHC (right 1st LHC project 2013)

## References/web links

1. ABPmer. (2015) Lymington to Yarmouth Ferries: Mitigation and Monitoring 9th Report for the Environment Management Panel Report for Wightlink Ltd R.2512 December 2015
2. <http://www.omreg.net/query-database/142-boiler-marsh-lymington/>
3. ABPmer, (2017). White Paper: Using Dredge Sediment for Habitat Creation and Restoration: A Cost Benefit Review ABPmer Internal White Paper, Report No. R.2865.
4. Black and Veatch (2017) Lymington Harbour Commissioners Saltmarsh Recharge By Bottom Dumping – Phase 3 Final Monitoring Report
5. Lowe, S., (2012). 'Lymington Harbour habitat replenishment scheme: Summary of works'. The Crown Estate, 18 pages. ISBN: 978-1-906410-35-3
6. <http://www.omreg.net/query-database/141-lymington-yacht-haven-marina/>