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2s3: Risk management and trade-offs

Ecosystem Services – An Approach for Sediment Management

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The ecosystem services approach involves classifying, describing and assessing the monetary value of natural resources in terms of the benefits that humans can derive from nature. An ecosystem services assessment has been developed and applied to the sediment management aspect of a harbour development for a scale typical for Ireland. Two sediment management techniques have been analysed for the sediment generated from dredging for the project; wetland creation and the widely practised disposal at sea. The wetland creation approach is consistent with the eco-friendly concept of ‘Building with Nature’ and also the circular economy. The ecosystem services assessment applied to the disposal at sea option yielded a negative overall monetary value (-€191,878/year) and the wetland creation option resulted in a positive overall monetary value (€1,403,275/year). These assessment results indicate that a ‘Building with Nature’ solution beneficially using dredged sediment can provide significant monetary benefit in the form of ecosystem services, for a sediment management project of this scale. This ecosystem services approach can contribute significantly to assessment of a sediment management projects and can inform stakeholders and policy makers of the benefits of ‘Building with Nature’ solutions.

Keywords: Dredging, ecosystem services, sustainable, sediment management, resource, circular economy