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SUSTAINABLE AND RESILIANT COASTAL CITIES (SARCC)

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Abstract

Sustainable And Resilient Coastal Cities (SARCC) is an Interreg 2Seas co-funded project, which aims to mainstream nature-based solutions (NBS) into coastal management and policy making. Whether that is as stand-alone projects or integrated into existing grey infrastructure, known as Hybrid-NBS. The project aims to build capacity of urban leaders and decision makers involved with coastal flood defences, to deploy NBS and understand the benefits they offer in comparison to traditional infrastructure.

Over years of R&D, Exo Environmental have previously developed GeoBlock^{TM} technology, which uses inert waste aggregates such as dredged sediment or quarry by-products for concrete like cast products. These serve a multitude of environmental purposes, such as Eco reef units and Eco rock armour.

As a project partner, Exo have developed unique surface textures which fit the aims set out by SARCC to create innovative Hybrid-NBS products. The developed products are unique surfaces which can be retrofitted to existing sea defences, encourage bio-colonisation and act as diversity enhancers when compared to conventional concrete or rock armour solutions. The use of natural base aggregate provides a 'known' substrate for the growth of biofilms and thus more complex ecosystems. Using 3D printed surface textures provides heterogeneity to the product design, increasing colonisation potential.

Following calcareous bio-colonisation, the Eco products then act as bio-armouring units, with living organisms absorbing erosive wave energy and protecting the coastline from weathering processes. This is particularly important in areas of coastal squeeze, where there is limited space for similar habitats to develop and hard defences are required.

Through unique research, Exo are contributing towards innovations in the Eco-Technology arena and supporting a circular economy of sustainability by reducing disposal costs and the associated carbon emissions. As well as creating products which serve as bio-diversity enhancers and perform vital services, such as erosion control.

Keywords: SARCC, Hybrid-NBS, GeoBlock technology, Surface textures, Bio-colonisation.

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