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Chatham, Deltares and Boskalis receive Dutch Government research grant

Chatham Rock Phosphate and its Dutch technical partners Boskalis and Deltares have received Dutch government research funding to improve the environmental management of marine mining. This co-funding has been awarded by The Netherlands based Topsector Water TKI Delta technology.

The increased global interest in the economic and environmental outcomes of marine mining for resources such as phosphate, manganese nodules and polymetallic sulphides has highlighted the need to develop tools and methods to predict, adaptively manage and reduce the environmental effects of marine mining.

Lack of field observations

Adapting computer-modelling tools to predict plume dispersion for deep-sea mining (or dredging) operations is hampered by a lack of field observations in these environments. It is possible to validate hydrodynamic and sediment resuspension models by deploying sensors for field observations over several months. Validating the predicted sediment plume dispersion is much more difficult as it requires a large-scale source of suspended material in the water such as trial mining. Trial mining requires an environmental permit, which usually requires knowledge of the sediment plume behaviour.

The research project will investigate the behaviour of re-deposited material using a combination of state of the art laboratory analyses and computer modelling to assess both the plume dispersion and the continuous process of settling, deposition and bed formation of sand and silt. The results will reduce the uncertainties regarding predicting re-suspension and dispersion of the material being returned to the seabed.

Ways to adaptively manage re-deposited sand and silt

This jointly developed project will make computer models of plume dispersion more realistic and will look at ways to adaptively manage re-deposited sand and silt in deep water. Additionally, the project will investigate the use of flocculants, natural materials that can be added to the returned sand and silt to make the sediment plume settle from the water more quickly. This may be the first time flocculants have been considered for deep water mining or dredging

Public-private partnerships

The Dutch Ministry for Economic Affairs stimulates public-private partnerships between research organizations and companies in the Topsector Water TKI Delta technology by allocating and awarding funds to reviewed high quality research proposals. Deltares is an independent institute for applied research in the field of water, subsurface and infrastructure, and Boskalis is a marine services company. Chatham Rock Phosphate

intends to apply for a marine consent to extract rock phosphate from the seabed on the Chatham Rise, east of New Zealand.

The results are being developed using the vast amount of data already available for the Chatham Rise marine mining project, but will have direct relevance to all projects in the offshore mining and dredging industry

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About Deltares

Deltares is an independent institute for applied research in the field of water and subsurface. Throughout the world, we work on smart solutions, innovations and applications for people, environment and society. Our main focus is on deltas, coastal regions and river basins. Managing these densely populated and vulnerable areas is complex, which is why we work closely with governments, businesses, other research institutes and universities at home and abroad. Our motto is Enabling Delta Life. As an applied research institute, the success of Deltares can be measured in the extent to which our expert knowledge can be used in and for society. For Deltares the quality of our expertise and advice comes first.

About Royal Boskalis Westminster

Royal Boskalis Westminster N.V. is a leading global services provider operating in the dredging, maritime infrastructure and maritime services sectors. The company provides creative and innovative all-round solutions to infrastructural challenges in the maritime, coastal and delta regions of the world with services including the construction and maintenance of ports and waterways, land reclamation, coastal defense and riverbank protection. In addition, Boskalis offers a wide variety of marine services and contracting for the oil and gas sector and offshore wind industry as well as salvage solutions (SMIT Salvage). Furthermore, Boskalis has a number of strategic partnerships in harbour towage and terminal services (KOTUG SMIT Towage, Keppel Smit Towage, Saam Smit Towage and Smit Lamnalco). With a versatile fleet of 1,000 units Boskalis operates in around 75 countries across six continents. Boskalis has over 8,200 employees, excluding its share in partnerships.

About Chatham Rock Phosphate

Chatham Rock Phosphate, a publicly listed company, was granted a mining permit in 2013 to develop New Zealand's only significant source of environmentally friendly pastoral phosphate fertiliser and is now preparing for a revised environmental consent application.

Our role as custodian of this resource is focused on delivering a secure and sustainable local supply of low-cadmium phosphate that will reduce fertiliser run-off into waterways, produce healthier soils and shrink fertiliser needs over time.

The resource has an estimated worth of \$5 to \$7 billion, representing one of New Zealand's most valuable mineral assets and is of huge strategic significance because phosphate is essential to maintain New Zealand's high agricultural productivity. Local and international investors have contributed more than \$40 million to develop the project's financial viability, environmental benefits and impacts, technical and logistical requirements, local and international product uses.

We propose to extract up to 1.5 million tonnes of phosphate nodules from the top half metre of sand on identified parts of an 820km² area on the Chatham Rise, 450km off the west coast of New Zealand, in waters of 400m. Our environmental consenting process has established extraction would have no material impact on fishing yields or profitability, marine mammals or seabirds.

In progressing plans to submit a new application we are working with government officials to seek improvement in the permitting process and iwi, academic, industry and central government input to ensure New Zealand can benefit from an environmentally superior phosphate source.

Progress is continuing to achieve a Toronto Stock Exchange listing, to provide a more useful share-trading platform for overseas shareholders and facilitate the capital raising needed for the consenting process and beyond.

We are also seeking to own other sustainable rock phosphate sources, to move from being a single project company and take more control of our destiny.