



## Update

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### Chatham Rock Phosphate summarises recent events and milestones

Chatham Rock Phosphate (NZ: CRP, TSX.V: NZP) (“CRP” or “the Company”) provides a further shareholder and stakeholder briefing. There is plenty happening so it’s time to provide another quick summary to shareholders. In this issue we will cover:

- An upfront reminder of the environmental and other benefits arising from our project and our rock phosphate. We keep repeating these messages and we need you to help us ensure that they reach as big an audience as possible
- Progress report on marine consent reapplication process
- A progress report on the NIWA disturber experiment
- Chatham presence at Taiwan and Japanese Agri-expo events
- Dredging and environmental protection working hand in hand – visit to Boskalis vessel “Fairway”
- Chatham Rise rock phosphate contribution to water quality objectives
- Chatham Rise project offers a secure local source of rock phosphate
- Rare earths progress report

### A reminder about our environmental and other benefits

You can be our advocates whenever our project is raised in conversation. To remind you why the Chatham Rise project remains hugely important for New Zealand, here are the key reasons:

- ✓ Our rock is a proven reactive phosphate rock. Using it results in much less run-off into waterways and an improved soil profile compared with the effects of manufactured fertilisers.
- ✓ It’s also an organic fertiliser with no additives being added and with the only processing being grinding and possible pelletisation
- ✓ It also contains ultra-low levels of cadmium, a cancer-causing heavy metal with much greater concentrations in other rock phosphate deposits
- ✓ Being locally sourced and needing to be applied less frequently results in much lower carbon

emissions (in effect increasing the present NZ electric vehicle fleet from 10,000 to 29,000 vehicles)

- ✓ The environmental footprint of seabed extraction is much smaller than the impact of onshore phosphate on local communities overseas
- ✓ The rock is within one day's sailing distance and supply is far more secure (and more ethical) than phosphate rock imported from unstable regions on the other side of the world
- ✓ The project economics are attractive and Chatham will pay significant royalties and income taxes
- ✓ The project will generate new jobs in environmental monitoring, on the mining ship, in the home port and in the science and agricultural sectors
- ✓ Chatham Rock phosphate has been independently demonstrated to be as effective as other phosphate fertilisers used in New Zealand. The omission (most recently demonstrated in recent media reports) of the two fertiliser co-ops to even acknowledge its existence is hard to understand as using our product would provide them with a green fertiliser alternative that would naturally complement their other fertiliser products.

See also our online interactive infographic at <http://www.rockphosphate.co.nz/projectinfographic>

### Permit Reapplication Process Continues

Following the success of fundraising earlier this year we had the resources to kick off the first step in the re-application process. This involved a scoping review, presently being undertaken by independent advisers and our project director, Renee Grogan which is expected to be largely complete in the next month. This will be reviewed by independent experts retained by the EPA and the feedback from that review (a significant milestone) will provide Chatham with guidance on the content of the final application.

As previously advised to shareholders, preparation of that application is expected to take at least a year, involving updates to a large number of supporting scientific reports and the likely need to gather more environmental data from the permit area. However, this next stage in the process cannot start until we have raised further capital and obviously achieving that objective is our number one priority.

### Niwa Sediment Disturber Experiment

Several months ago we advised shareholders an ocean study by NIWA (National Institute of Water and Atmospheric Research) to be undertaken in May would be particularly relevant to our proposed marine phosphate recovery operation on the Chatham Rise.

Uncertainty about the effects of sediment plumes created by human activities in the deep sea, such as from potential deep-sea mining and bottom trawling, is a major environmental concern. This led to funding of NIWA by the Ministry of Business, Innovation and Employment to support a NIWA 5 year programme researching the effects of sedimentation, to inform options for how to manage such effects on the environment.

The research programme has two components, a field survey experiment with in situ observations of a sediment plume, and laboratory-based experiments. In combination, the two approaches are expected to provide information on the concentrations and distances over which impacts of suspended sediment on faunal communities become 'ecologically significant', as well as assess the short to medium term resilience and recovery of species and communities.

In May-June a survey was carried out east of New Zealand. Baseline data were collected on bathymetry, topography, water column characteristics, sediment composition, and faunal community structure and abundance prior to disturbance, and then post-disturbance. A specialised "Benthic Disturber" developed

by NOAA in the 1990s for generating sediment plumes was refurbished and adapted for use off NIWA's research vessel. This was used to create a sediment plume on 3 occasions with towing periods between 12 and 30 hours.

The disturber failed to produce as extensive a sediment plume as hoped, as the fluidising system didn't penetrate and stir up the heavier sandy component of sediments in the area. Hence there was little immediate visual impact as the fine sediments appeared to disperse rapidly in the relatively fast bottom current conditions. Nevertheless, the complex interaction of multiple gear types and disciplines planned for the survey worked well overall. The survey collected a large amount of oceanographic, sedimentological, and biological data that provide significant insights into plume effects, and will support a wide variety of analyses in the coming months. Additional funding is being sought by NIWA to modify the Benthic Disturber and repeat the disturbance experiment again in 2019."

### **Agri-World (Tokyo) and Agri-Tech (Taipei)**

Chatham recently attended and hosted a booth at these two agriculture expos and also presented to investors at the Taiwan event.

At both shows we had a steady stream of people coming to the booth, mostly focused on representing us as distributors in the Asia Pacific region. However, a number of potential investors including major corporates engaged with us and subsequent dialogues have ensued.

Both shows were also successful in significantly raising our profile in our target market region. If the level of interest we encountered is anything to go by it's clear we will have little difficulty in selling our rock.

### **Boskalis dredger "Fairway" is presently operating in NZ waters**

Shareholders will be aware we have worked closely with Royal Boskalis Westminster (Boskalis) since 2011. Our proposed phosphate recovery operation has been conceived and designed by Boskalis and the company is also a shareholder in Chatham.

Boskalis recently won the contract to dredge the Lyttelton harbour and as a result its largest dredger "Fairway" has been occupied for the last two months deepening and widening the shipping channel in Lyttelton Harbour.

As is routine in dredging contracts world-wide, the dredging operation is operating within extremely fine environmental tolerances and is being very closely monitored. Plume-related data is being gathered by buoys moored next to the dredging operation and this data is freely available on-line.

Undertaking this contract is a fortuitous opportunity for Boskalis to demonstrate to New Zealand stakeholders they really are world class at what they do. Chatham has taken full advantage of this by hosting two visits to the vessel by a wide range of stakeholders including representatives of iwi and environmental agencies.

### **Chatham Rise Rock Phosphate Contribution to Water Quality Objectives**

The Government recently announced an intention to achieve a noticeable improvement in water quality within five years and released a blueprint to improve freshwater quality.

This is an issue Chatham Rock Phosphate has highlighted for several years, as we have a proven, very effective solution to the problem. In 2012 we provided detailed briefing notes on this to the then Minister for the Environment and said:

*Chatham Rise rock phosphate, being a direct application fertiliser, offers the solution to run-off into waterways as a range of scientific studies over many years has shown direct application rock phosphate offers strong environmental benefits.*

CRP has evaluated studies comparing the use of rock phosphate and super phosphate on New Zealand and international farmland. They show when applied directly reactive rock phosphate (RPR) is both a highly effective sustained release fertiliser and resistant to leaching.

The findings of the studies – some of which go back several years – are supported by Dr Bert Quin, probably New Zealand's pre-eminent expert on the use of rock phosphate as a fertiliser, who first conducted extensive field trials while working as a scientist for government agencies during the 1980s.

Dr Quin believes nutrients continue to enter waterways from agricultural land simply because of the type of fertilisers we use. He says the traditional fertilisers used in New Zealand have been single superphosphate ('super'), which supplies phosphorus (P) and sulphur (S), and urea for nitrogen (N).

He says their biggest problems are that they are 'leaky' fertilisers.

"Super is prone to run-off of applied phosphorus into waterways in the weeks after application, leaching into shallow sub-surface drains and water bodies on dairy farms, and being leached right through soils with low phosphorus retention such as those in Northland and the West Coast. Urea is prone to volatilisation (evaporation) losses as ammonia gas to the atmosphere, nitrate leaching and nitrous oxide GHG emission.

"By far the most cost-effective option for phosphorus is reactive phosphate rock or 'RPR'. This is a natural mineral, formed on the sea floor originally, which is a very effective source of sustained-release phosphorus, ideal for maintaining high-producing pasture and extremely resistant to leaching.

Dr Quin estimates switching from super phosphate to RPR and RPR/DAP (diammonium phosphate) blends would reduce average run-off losses of P into waterways by 80-90%.

Dr Quin's company is importing RPR from Algeria, and welcomes a variety of low cadmium content true RPRs becoming available to NZ farmers.

### **Chatham Rise project offers a secure local source of rock phosphate**

In recent months a series of articles has been published concerning the controversial importation of West Sahara phosphate rock by Ballance and Ravensdown.

We first highlighted this security of supply and ethical issue some years ago have made two further announcements in the last year. We quote from the second announcement.

"Chatham notes that the halting of a second phosphate shipment from the Western Sahara is intensifying the supply risk for New Zealand farmers. The need for New Zealand to secure its own low cadmium and ethical phosphate resource was highlighted by news that Panama authorities had detained a Moroccan phosphate shipment from the Western Sahara after the Polisario independence movement claimed the cargo had been transported illegally"

The detention of the vessel carrying phosphate rock cargo from Morocco's OCP for Canada's Agrium was the second tanker stopped by a Polisario legal challenge, a new tactic the independence movement has been using in its conflict with Morocco. The first shipment, destined for New Zealand, was detained in South Africa.

Western Sahara has been disputed since 1975, when Morocco claimed it as part of the kingdom and the Polisario fought a guerrilla war for the Sahrawi people's independence.

Both New Zealand fertiliser manufacturers source a large part of their phosphate rock supply from that area so the implications for farmers and the economically important agriculture sector are serious.

Most recently Polisario has advised that it may proceed with court action to seek the abolition of West Sahara imported rock by our two farmer-owned fertiliser cooperatives.

It seems inevitable that the last bastion of this internationally condemned trade will be dismantled; it's a matter of when and not if.

Ballance and Ravensdown both continue to maintain they have no acceptable alternative source of supply despite there being a number of other rock phosphate sources (including OCP's mines in Morocco) and elsewhere in South America, North Africa and various Arab states.

And right on their doorstep there is of course Chatham Rise rock phosphate which has been tested by both co-ops during the last decade and hence they are well aware of its properties.

### **Rare Earths Progress Report**

Chatham has now commissioned a substantial overseas company to undertake a research project aimed at separating valuable by-products (including rare earths) contained within the sandy seafloor matrix that contains the rock phosphate deposit.

They will also be investigating the feasibility of extracting rare earths also contained in the rock phosphate nodules. 15 of the 17 known rare earths are present in these nodules.

Rare earths are widely used in almost all of the high tech gadgets we now take for granted, including electric cars, personal communication devices, TV and computer screens, camera lenses, etc.

Successful recovery of even a small proportion of these by-products could add significantly to our revenue and profitability and also establish a strategic ocean-floor asset for New Zealand.

Regards

**Chris Castle, Managing Director**  
**[chris@crpl.co.nz](mailto:chris@crpl.co.nz) or +64 21 55 81 85**  
**skype: phosphateking**

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